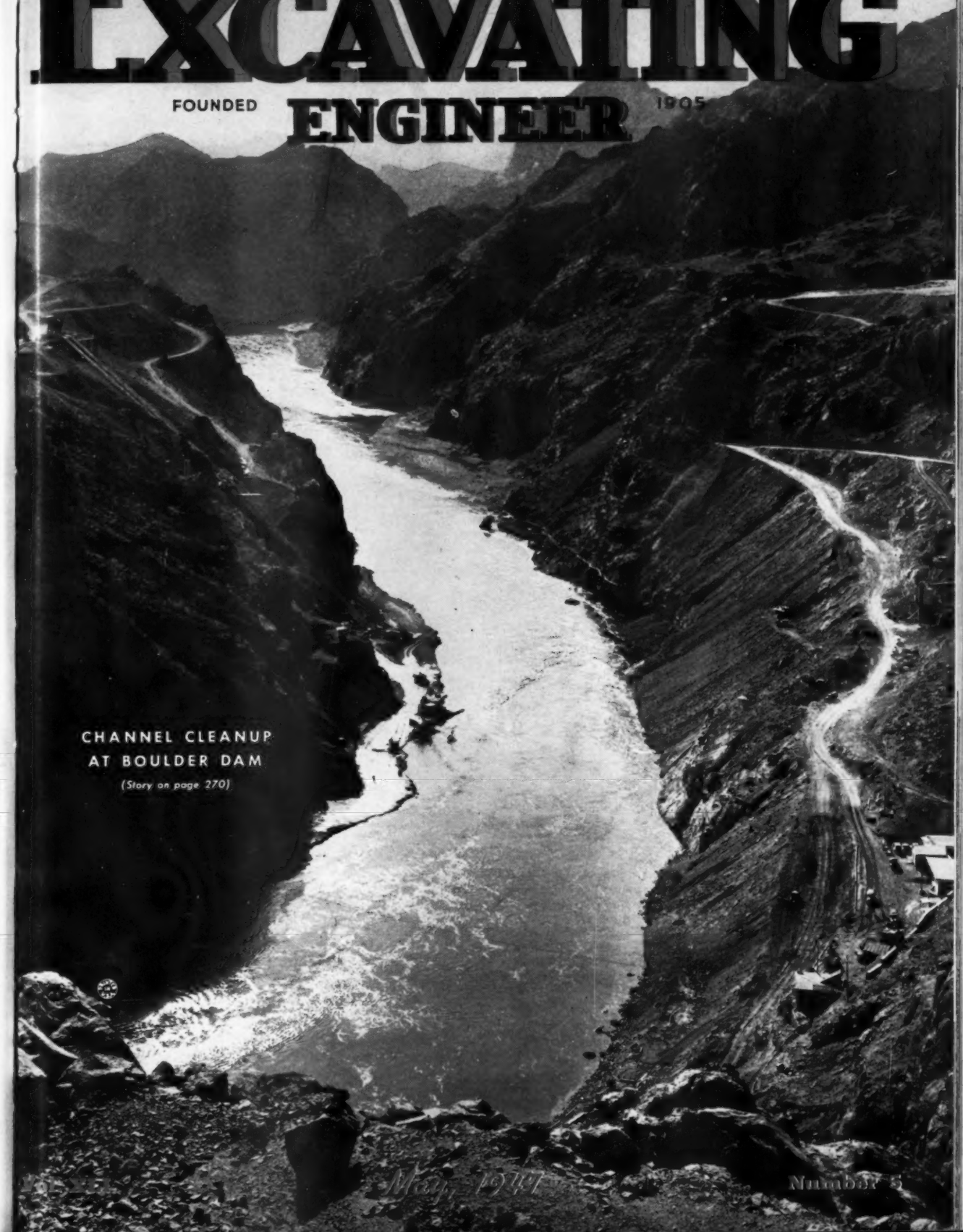
TRANSPORTATION LIBRARY

EXCAVATING ENGINEER

FOUNDED 1905



CHANNEL CLEANUP
AT BOULDER DAM

(Story on page 270)

May, 1941 Number 5

in a BALANCED Earthmoving Team

What's the performance tip-off on a *balanced* earthmoving team?

Watch a Bucyrus-Erie Bullgrader-International crawler tractor combination for the answer! Note how this combination unit sweeps through the cut with smooth, even action, without gouging, nosing down, jerking or stalling. See how the tractor tracks work full length on the ground, without wasting traction "pulling against air". And, most important of all, check into the output and note the superiority there.

Bucyrus-Erie Bullgraders and bulldozers are so carefully designed to fit International crawler tractors that these tractors retain all of their operating characteristics and effectiveness. The weight of the equipment and the digging loads imposed are properly distributed to give you full advantage of all the power furnished by the tractor. This means more power at the blade, more dirt moved, less fuel burned. It also means lower repair costs, because even distribution of track roller loads prevents excessive wear and strain on tractor front idlers and rollers.

Your International Industrial Tractor Distributor will gladly give you the full story on these balanced earthmoving teams. Ask him about them —and about the complete line of Bucyrus-Erie tractor equipment as well. Bucyrus-Erie Company, So. Milwaukee, Wisconsin.

See Your
INTERNATIONAL
Industrial
Tractor
Distributor

72T47C

For BUCYRUS ERIE Balanced Tractor Equipment

TRANSPORTATION LIBRARY

EXCAVATING ENGINEER

FOUNDED 1905

May Advertisers

American Steel Dredge Co., Inc. 282
American Steel & Wire Co. 257

Baker Mfg. Co. 275
Bethlehem Steel Company 249
Blaw-Knox Company 283
Bucyrus-Erie Company 2nd Cover 258-259, 289, 297, 301

Colorado Fuel & Iron Corporation, The Wickwire Spencer Steel Div. 279
Columbia Steel Company 257

Detroit Diesel Engine Division, General Motors Corp. 254

Erie Steel Construction Co. 286
Euclid Road Machinery Co., The 252

For Sale (Classified) 303

Gar Wood Industries, Inc. Hoist and Body Division 250
Gatke Corporation 287

Haiss Manufacturing Co., Inc. George 292
Hayward Company, The 284
Harnischfeger Corp. 290

International Harvester Company 276-277

Jahn Co., C. R. 292
Johnson Company, C. S. 298-299

Koehring Company 298-299
Kwik-Mix Company 298-299

LeRoi Company 4th Cover
LeTourneau, Inc., R. G. 294-295

Macwhyte Company 255
Moon Mfg. Co. 296

Northwest Engineering Co. 253

Onan & Sons, Inc., D. W. 282
Osgood Company, The 260
Owen Bucket Company, The 297

Page Engineering Co. 256
Parsons Company 298-299
Preformed Wire Rope Information Bureau 3rd Cover

Rogers Brothers Corporation 288

Sauerman Brothers, Inc. 284
Sheppard Co., Inc., R. H. 281
Standard Oil of California 261

U. S. Steel Company 257
U. S. Treasury Dept. 293

Wellman Engineering Co., The 285
White Manufacturing Co. 296
Wickwire Spencer Steel Division, The, Colorado Fuel & Iron Corporation 279

Contents

Vol. XLI No. 5 **May, 1947**

Single Dragline Strips 750,000 Yards a Month 262

25-cu. yd. walking dragline at Maumee Collieries mine number 28 handles 75-ft. overburden at speed and cost formerly thought obtainable only with large shovels.

Safe Use of Heavy Duty Equipment — by R. A. Beckwith 268

Effective leadership of safety-minded chief executives in a safety program developed and inaugurated by management can keep employees conscious of the need for safe practices while working around construction equipment.

Large Dragline Floats to Work at Boulder Site — by C. E. Ferguson 270

Having to work both sides of the Colorado River on a recent Boulder Dam job with a 5-yd. dragline, the Guy F. Atkinson Company solved the assembly and transportation problems by means of the government highline and a specially constructed barge.

Governors on Highways 272

A condensation of recent gubernatorial messages on highway construction problems to legislatures of 36 states.

Equipment You Ought to Know About 274

Shots from the Firing Line 278

Peak in Building Costs Reached According to Survey 278
Award 4 Million Dollar Contract at Granby Dam 280
Philippine Rehabilitation Work Offered to U. S. Contractors 280
W. A. A. Surplus Machinery to be Sold on New Basis 281
Announce A. G. C. Meetings 282
Begin Work on 10,000-Ft. Tunnel Through Rock at Coulee 282
New Arkansas Highway Jobs 283
Reclamation Engineer Joins China's Yellow River Project 283
Conference Maps Progress of Portland to N. Y. Highway 283
Higher Production of Building Materials is Forecast 284
Estimate 50% Increase in Connecticut Road Program 285
Mississippi Awards $10 Million in Road Contracts 285

Not in the Contract 291

Notes from the Manufacturers 292

Obituary — J. J. Wilson 297

Field Notes 300

Hoist Rope Chain 300
Destroying Detonators 300
Permanent Pipe Repair 300

New Trade Literature 304

Published Monthly by

THE EXCAVATING ENGINEER PUBLISHING COMPANY South Milwaukee, Wisconsin, U. S. A.

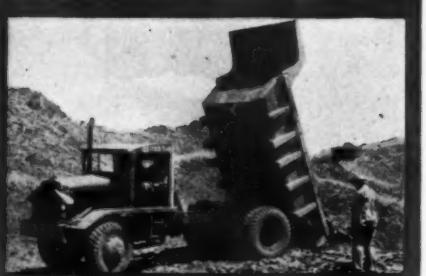
E. M. HEUSTON, Publisher
D. B. REED, JR., Manager
M. J. BARGENQUEST, Sales Manager
P. H. WOODS, Editor
M. B. JAEGER, Associate Editor
E. W. ARNDT, Art Editor

Regular Subscription (payable in advance): 25 cents per copy, $2.50 a year: Canada and foreign, subject to publication policy, $3.50 per year. Special subscription: Upon written request on company letterhead this publication will be sent free of charge to companies, executives and supervisors engaged actively in excavating.

COPYRIGHT 1947 BY THE EXCAVATING ENGINEER PUBLISHING COMPANY

CCA Member Controlled Circulation Audit

EUCLIDS at work on DAVIS DAM



Rugged construction of Rear-Dump Euclids withstands impact of loading heavy excavation by large shovels. High dumping angle and clearance from rear wheels discharges load over edge of the fill.

● About 67 miles below Boulder Dam, on the Colorado River, the U. S. Bureau of Reclamation is building Davis Dam, an earth and rock-fill structure of 4,400,000 cu. yds. Utah Construction Co. has the contract for the major part of this project, which includes 15,000,000 cu. yds. of earth work, and will take four years to complete.

A fleet of 41 Rear-Dump and Bottom-Dump Euclids is hauling this huge yardage of heavy excavation. Working on 'round the clock schedules, the "Eucs" have kept this tough job going in high gear. Their speed and large capacity, combined with rugged staying power, have enabled the contractor to stay ahead of schedule despite a wide range of operating conditions.

Because they are designed and built for efficient and dependable performance in heavy off-the-highway service, Euclids cut hauling costs. Ask your Euclid distributor or representative for complete information on the models best suited to your own hauling equipment needs.

The EUCLID ROAD MACHINERY Co.
CLEVELAND 17, OHIO

EUCLIDS *Move the Earth*

STANDARD ENGINEER'S REPORT

RPM CALOL

TEST DATA

UNIT G.M.C. Diesel 6-71 # Bus engine 6711367

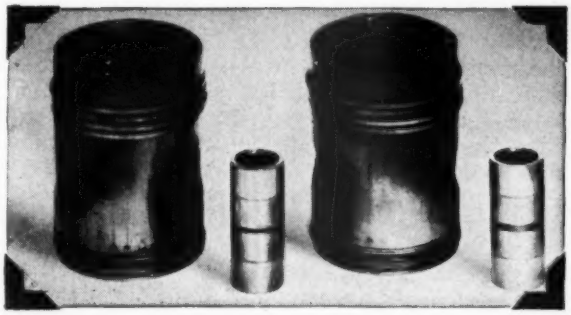
LUBRICANT RPM Delo oil SAE 20 and RPM Heavy Duty motor oil SAE 30

MILES RUN 234.539

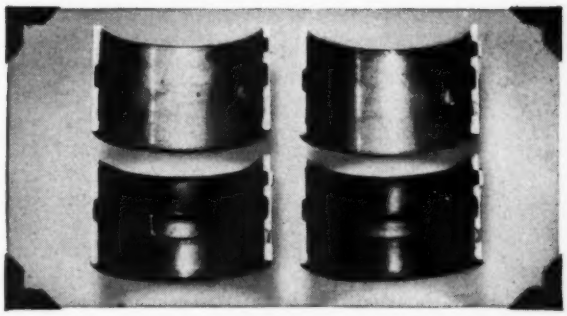
FIRM L.A. Motor Coach Lines

LOCATION Los Angeles

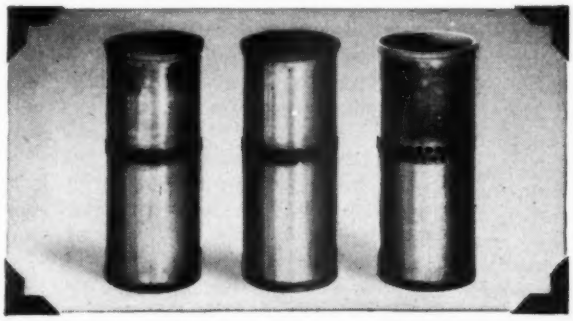
DIESEL BUS ENGINE RUNS 234,539 MILES ON RPM OILS WITHOUT REPLACEMENT OF ANY PARTS



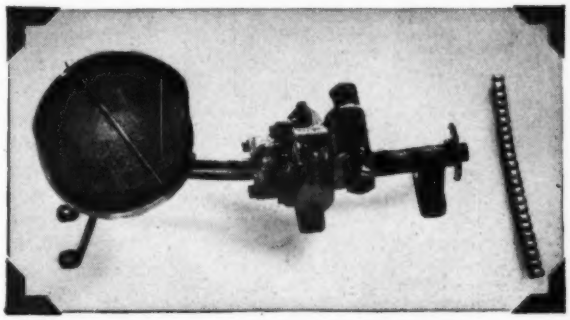
These pistons and pins came from a bus engine operated in city service for 234,539 miles on RPM Oils. As this photograph shows, they were unscratched and rings generally free. RPM Oils keep parts clean.



No cracks, pits or scoring appeared on main or connecting rod bearings. The highest wear measurement on any con rod journal was .0008"; on any main journal .0012". RPM Oils are non-corrosive.



All cylinders were smooth and varnish-free. Measurements on each showed wear from none to only .0035" near top of No. 4. No. 1 was .0013" out of round. RPM Oils stick on parts running or idle.



The oil-pump screen was clear of sludge and other foreign matter. RPM Oils are highly oxidation-resistant. Any sludge or loosened varnish and lacquer stay suspended and drain out with the oils.

REMARKS The test on RPM Oils ended at 234,539 miles without bearing failure or piston seizure. (The longest run on any other oil before failure was 177,000 miles.)

RPM DELO Diesel Engine Lubricating Oil SAE 20 was used for the first 66,000 miles of the test. RPM Heavy Duty Motor Oil SAE 30 for the last 168,539 miles. Both of these oils contain special compounds which clean varnish, lacquer and sludge from engine parts, prevent corrosion, resist oxidation and keep lubricant on hot and cold spots alike.

Trademarks, "RPM," "RPM Delo," Reg. U. S. Pat. Off.

STANDARD OF CALIFORNIA • San Francisco, Calif.
THE CALIFORNIA COMPANY • Denver, Colo.
STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA OIL COMPANY • New York

Single Dragline Strips 750,000 Yards a Month

* Hugh B. Lee, vice president and general manager, in front of the main operating office at Terre Haute, Ind.

25-cu. yd. walking dragline at Maumee Collieries mine number 28 handles 75-ft. overburden at speed and cost formerly thought obtainable only with large shovels.

LINTON, IND., approximate center of population for the U. S., is today also a center of attention for the open pit soft coal mining industry. After an 18 months' high production operation centering around their 25-yd. excavator, Maumee Collieries point to the very large dragline as an answer coal men have long been seeking. "Since the main job in coal stripping is to get the overburden out of the way by the quickest and most economical method, we know now that the real answer to the deep work problem is a single, sufficiently large, fast dragline. We have just that here at our number 28 mine," is the way Hugh B. Lee, Maumee vice president and general manager, puts it.

The sole overburden excavator used at Maumee's mine, a 25-yd. Bucyrus-Erie dragline with 180-ft. boom, is uncovering 2500 tons of coal a day by removing overburden up to 75 feet deep from a 3-ft. 9-in. coal seam. The large size of this electrically-operated walking excavator, together with a carefully studied plan of operation, appear to set a new par for deep overburden work.

Pioneers in the use of large draglines for bituminous coal stripping, Maumee Collieries with a background of 35 years of coal mining, has had long experience in heavy overburden stripping methods common today. Other operations have employed draglines in tandem with shovels, one helping the other to remove spoil to a sufficient distance so that coal could be uncovered. The big dragline at mine 28 is doing the job unassisted, spoiling so efficiently that the piles rarely exceed 15 to 20 feet in height above original ground level.

•The 180-ft. boom towers overhead as the Bucyrus-Erie dragline takes a 25-yd. gulp in the pilot cut of a 50-ft. progress section.

1000-Acre Layout

The company's no. 28 workings cover about 1000 acres. Although much of the underlying high grade no. 4 bituminous coal has been removed by shovel operations of the 1920's, most of this work was done in overburden ranging from 20 to 45 feet deep. Previous operations skirted the large areas of deeper overburden—up to 90 feet—as being impossible.

When the 25-yd. Bucyrus-Erie 1150-B dragline was purchased in 1945, the company laid out the work in long sweeping outside curves, 85 feet wide and up to a mile long. Curvature was made greatest in the sections where deepest digging was indicated by test borings. This design, carefully followed, has enabled the big dragline to uncover easily coal until recently considered uneconomical for stripping work due to the extreme depth of overburden.

Simply stated, the outside curve layout gives the dragline an appreciably greater area in which to

pile overburden, decreasing the necessity for accuracy in dumping, and reducing the maximum height of the spoil pile—thereby increasing the speed of operation and total output.

Pilot Cut

Overburden is removed along the 85-ft. wide strip in 50-ft. progress moves or sections. Always moving *away* from the preparation plant in order to prevent interference with loading and hauling operations, the dragline, with its base 85 feet from the highwall, first removes about 15 feet of clay overburden from the 50-ft. section in order to save excessive hoisting in later excavation work. Because of its position, the unit seldom has to swing more than 45 degrees between dig and dump in this operation. Next, after moving up along a line 85 feet from the old highwall, the dragline cuts a triangular slot 45 to 50 feet wide at the old face and tapering to the machine, thus forming the new highwall. This pilot cut is carried to the coal seam.

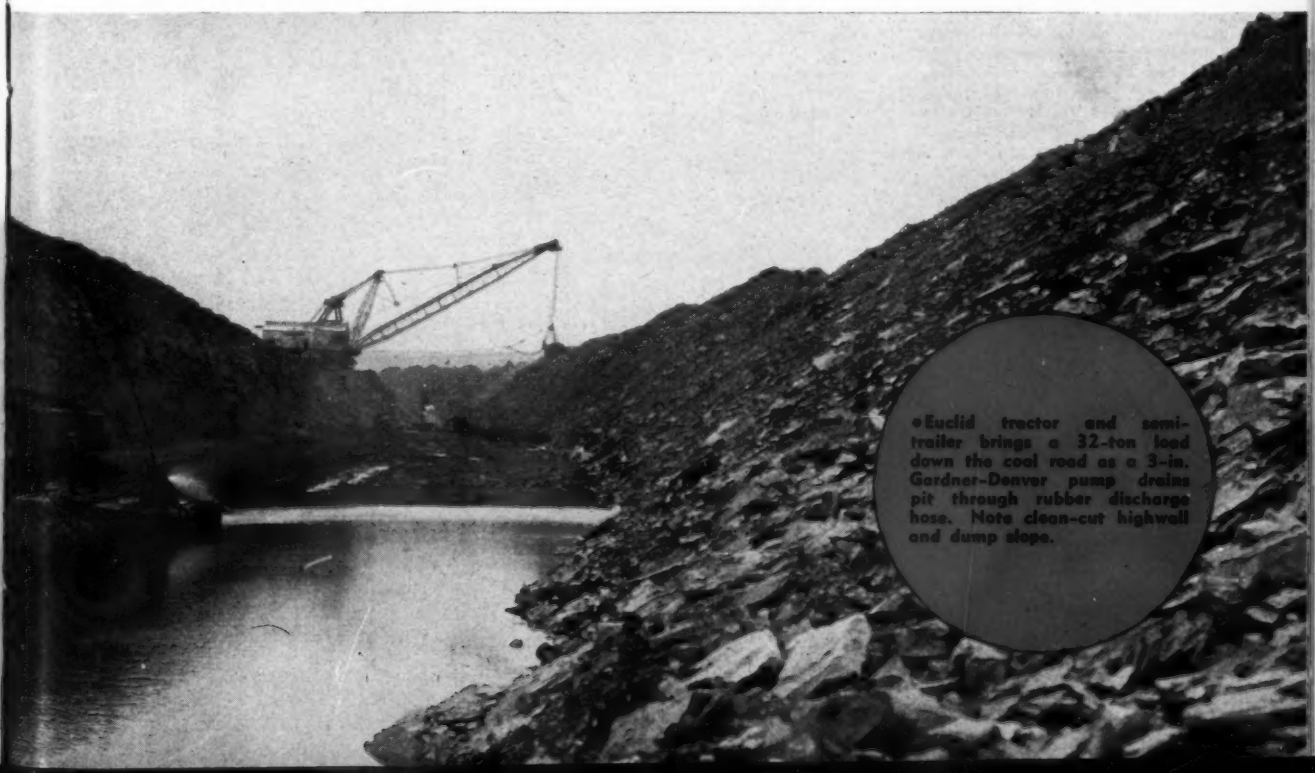
This method of preparation leaves a very straight, nearly vertical (85 degrees, approximately) highwall. Material from the pilot cut is used to form a retaining wall just beyond the edge of the untouched coal seam. With this retaining wall complete and having finished the pilot cut, the dragline takes three steps (21 feet) toward the old highwall and starts to dig material from the bench, casting over the retaining wall, using a continuous swing much of the time.

The machine swings in a clockwise direction, stopping only to load the bucket and dumping "on the fly." The combination of concave spoil area, the dragline being closer to the spoil pile by virtue of the 21-ft. move, and the added throw of the continuous swing gives the operator a wide dumping area. Oscar Wolf, superintendent at mine 28, estimates that spoil is thrown an extra 25 feet by the centrifugal force created by the speed of swing. Although no definite figures are available, company officials estimate that this mode of operation results in an appreciable saving in power.

As it removes the balance of the 85-ft. wide by 50-ft. long progress section, the dragline makes three more moves toward the pit in order to cast spoil farther back, eventually standing on the edge of the old highwall. As a final operation before going on to the next section, the dragline strips top soil from the bench in a radius of about 180 feet and adds a layer of shale to form a travel way. With overburden 65 to 70 feet deep, as in current work, the excavator completes one 50-ft. progress section every eight hour shift.

Excavation is carried on 24 hours a day in three shifts, seven days a week. Maumee officials yardstick the machine at a mile of 85-ft. wide strip a month. Records show an average of over 750,000 cu. yds. of overburden

●28's Superintendent Oscar Wolf checks teeth of the draglines 25-yd. Bucyrus-Erie bucket.



●Euclid tractor and semi-trailer brings a 32-ton load down the coal road as a 3-in. Gardner-Denver pump drains pit through rubber discharge hose. Note clean-cut highwall and dump slope.

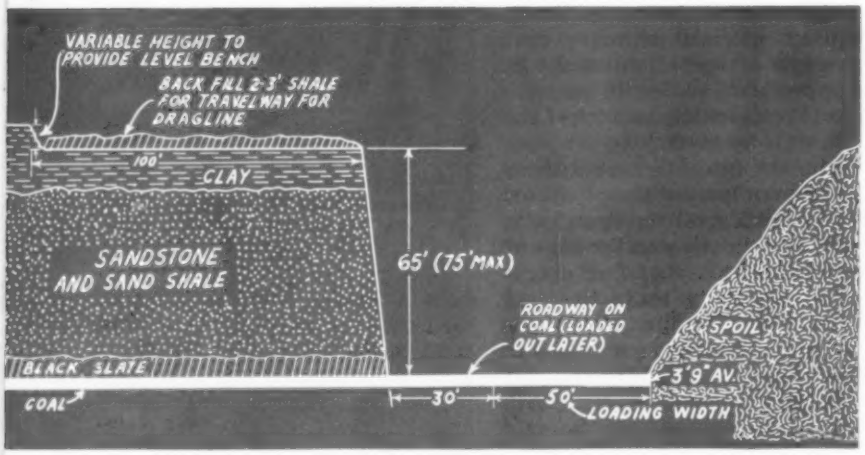
removed monthly. The total for March, 1947, was 810,000, and the best record to date was June of last year, in which month the dragline removed 831,400 yards.

After completion of one of the long working strips, the dragline is dead-headed back toward the tipple before starting the next strip so that excavating operations always move in a northerly direction—away from the preparation plant.

Operations will soon move, temporarily, to the north end of mine 28 where a county road will be taken up and coal lying under and around it removed. Maumee will replace this road after this operation—about a month's work—is complete. The dragline will then be moved across this road to the site of an old drift mine, abandoned since 1928, where all coal remaining in the old workings will be stripped and loaded. The abandoned drifts will be used as a sump during this operation, employing two deep well pumps—a 6-in. Layne and a 10-in. Deming.

A hauling road for this second operation is being built by the Bucyrus-Erie dragline during its regular stripping work. After a layer of shale has been deposited, the road is leveled by an Allis-Chalmers HD-7W tractor with Baker bulldozer and a layer of crushed limestone added. Hauling roads are kept in prime condition by frequent dragging and rolling. A 1-½-ton Ford truck carrying a 1000-gal. water tank sprinkles roads eight hours a day.

•Operator checks continuous swing recorder attached to the right front swing motor, inside the dragline cab.



•Typical section across pit. Since hard sandstone lies just under the coal, the 30-ft. coal road can be loaded out any time and trucks can operate on the bottom of the pit. This is very unusual in stripping jobs—usually a clay deposit under the coal makes truck operation impractical without a coal road.

The Bucyrus-Erie dragline weighs 1100 tons and carries 140 tons of gravel ballast. Traction is of the walking type, with tub base 44 feet in diameter and shoes eight feet wide by 48 feet long. Alternating current at 4000 volts brought in from Indiana Public Service lines operates the machine's 12 generators, including four 190-kw units for two 450-hp hoist motors, four 190-kw units for two 450-hp hoist generators and for two 450-hp drag motors, three 112½-kw generators for the three 125-hp swing motors, and a 112½-kw exciter. All electrical equipment is of General Electric manufacture.

A recorder placed by Maumee on the right front swing motor keeps a continuous record of swings made by the machine. In spite of its great weight and size, the dragline has averaged nearly 450 bucketsfull per shift over a period of months, making it the fastest as well as the largest stripper in Maumee experience. This speed, which would not normally be expected in a dragline of this

•The big dragline casts overburden to the spoil bank while below in the pit the 3½-yd. Marion loads coal to a Euclid 32-ton semi-trailer-tractor combination. At right, an Allis-Chalmers HD7W tractor with Gar Wood Bulldozer cleans top of coal seam ahead of loading shovel.

size, is one of the major reasons for its success, according to Mr. Lee, whose school (Ohio State University) colors—also those of Maumee president O. S. Roberts —appear in the big dragline's paint job. The lower part of the cab and the trim are scarlet with boom and other parts in grey. This same color scheme is followed inside the cab.

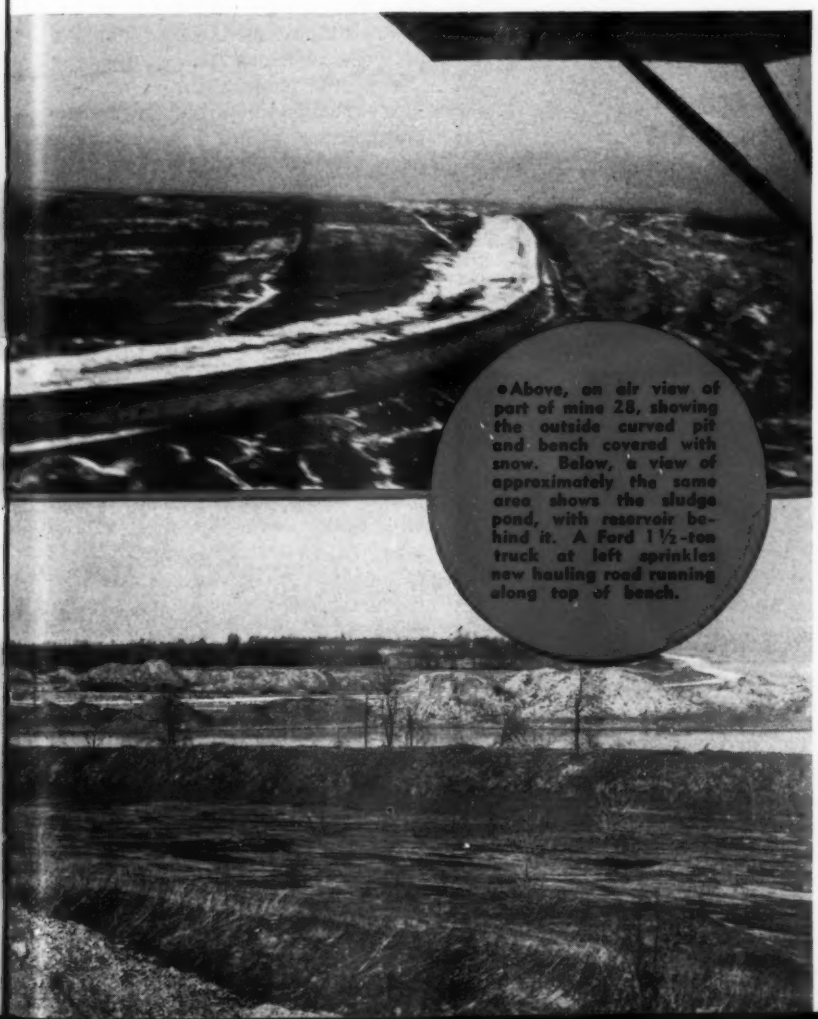
Twin drag and hoist ropes are used—at present, 260 ft. of 2½-in. American Steel & Wire rope for drag and 450 ft. of 2-in. Leschen rope for hoist. The twin drag has been found to give greatly improved performance in rock because of its "two fisted pull." Use of these relatively light cables simplifies replacements and lengthens the time between them.

Mr. Wolf makes particular mention of the twin fairlead, which on this machine is placed high up in the boom foot to keep cables out of the dirt. Because of this feature, the maintenance crew is able to keep drag ropes and drum well oiled, which is thought to contribute in a large measure to the long rope life experienced. The ropes commonly haul in over a million-and-a-half cubic yards of material before requiring replacement.

• Euclid truck (left) dumps load of coal into receiving hopper at the plant.

Operators of the big dragline, employing a high measure of skill in their work, remove all overburden down to the coal seam. It is customary for them to peel off final layers of rock without damaging the coal and special care is used to keep the teeth of the 25-yd. bucket sharp for this purpose. The small amount of refuse left by the dragline is cleaned up ahead of the loading shovel by an Allis-Chalmers HD-7W tractor with a Gar Wood bulldozer working in the pit. An Allis-Chalmers HD-14 with Gar Wood bulldozer works around the dragline base, preparing a walking road along the top of the bench.

Coal is loaded to bottom-dump semi-trailer trucks—three Euclid tractors with 32-ton Euclid trailers and two Dart tractors pulling Austin-Western 30-ton trailers—by a 3½-yd. Marion electric shovel. At present, trucks haul the coal 1½ miles to the processing plant, most of this distance on the coal road in the pit. Because of the great depth of overburden, coal is loaded one shift of eight hours, five days a week and each truck makes 25 to 30 trips a day.

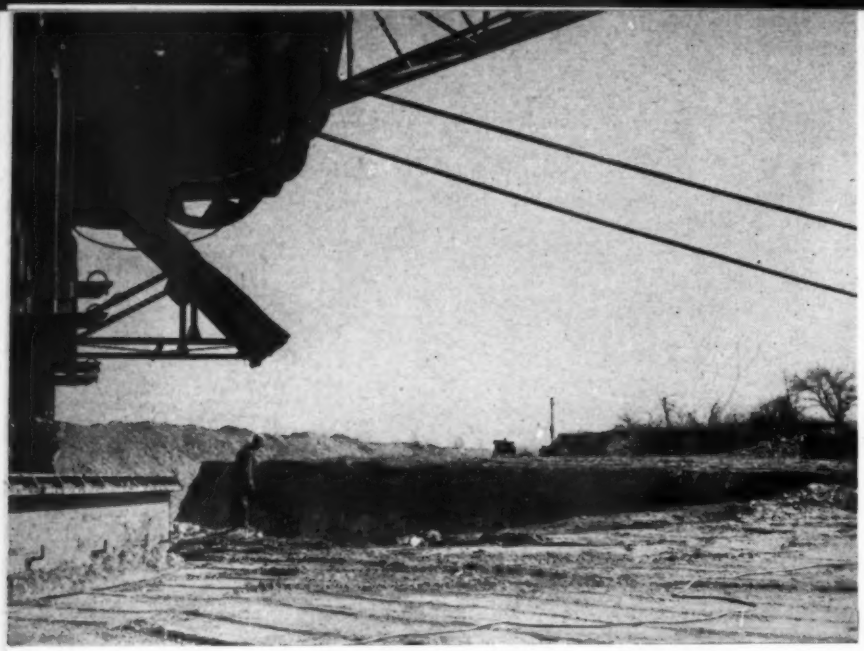


• Above, an air view of part of mine 28, showing the outside curved pit and bench covered with snow. Below, a view of approximately the same area shows the sludge pond, with reservoir behind it. A Ford 1½-ton truck at left sprinkles new hauling road running along top of bench.

Preparation Plant

The preparation plant, located at the south edge of the stripping area, was moved from the company's Ayredale mine in the fall of 1945 and enlarged by adding a settling cone and increasing the washing capacity. This is a 5-track plant, equipped to ship hand-picked coal in 8x4 and 6x4 lump sizes; washed coal in 4x2 and 4x1½ egg, 2x1½ stove, 1½x ¾ nut, 1½ and ¾ screenings, and ¾x24 mesh stoker sizes.

A trough washer is used to clean 4x2-in. raw coal, while minus 2-in. coal is washed in a



•Closeup of the dragline shows twin fairleads and edge of 44-ft. diameter tub base. Bucyrus-Erie 42-T drill works in background.

•Up from the pit come big loads of coal. Following the Euclid is an International 9½-yd. dump truck which hauls gob in the other direction. All hauling units have Cummings diesel power.

•The 25-yd. dragline levels shale it has just cast up for a temporary hauling road. Fuel for the bulldozer (a Gar Wood mounted on Allis-Chalmers HD-14 tractor) is supplied from the skid-mounted tank at right which is serviced by an oil company tank truck.

Baum type jig. Output of the plant averages about 2500 tons of cleaned coal loaded into approximately 50 railroad cars daily. Capacity is sufficient to handle in excess of 3000 tons per eight hour day.

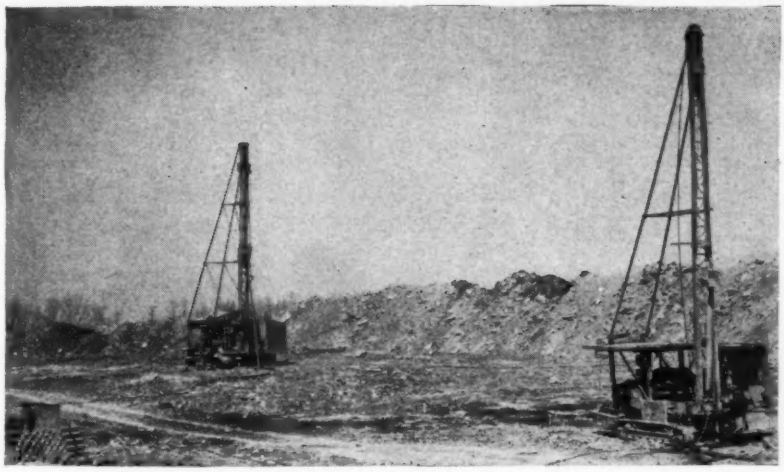
Because this is a premium coal, it is shipped to users at greater distances than is most Indiana coal. Representative states to which regular shipments are made are Minnesota, Wisconsin, Iowa, Illinois, Michigan, Ohio, and, of course, Indiana. Number 4 coal, high in fusion temperature and low in sulphur, has long been known as the gas coal of Indiana and is favored particularly in 4x 2 and 1½x3/4 sizes, by ceramic brick and tile, and steel industries, as well as by the gas producers. Maumee's hand picked coal and 3/4x24 screenings go largely to domestic users, the latter for stoker firing. Other sizes find most use in industrial applications.

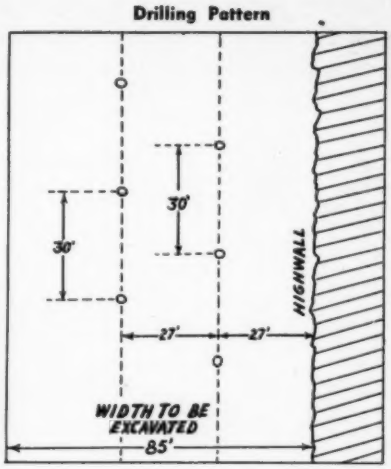
Location Problem

The management faced a choice between two locations in erecting the preparation plant. One was in a stream valley, but to put the plant there would have made it necessary to use the valley as a sludge pond. The alternative was to locate the plant in an old spoil area, which would make a large area available for a sludge pond and permit use of the stream valley for drainage.

The latter location was chosen. The objection to setting the plant in the spoil area was the risk of settlement, but this was discounted by putting in piers before the spoil was graded. In this way the plant was founded on firm soil which had been deposited in the late 20's. With more than 15 years of settlement, it was felt that the material, which consists principally of shale with a small proportion of rock, would give sufficiently firm foundation, and this has proved to be the case. A recent check showed a maximum settlement of only two inches.

Earth levies were thrown up to define the sludge pit and to protect the tracks below the preparation plant from flooding, inasmuch as they are below the water





•Bucyrus-Erie 42-T (left) and Loomis 88 drills at work bench follow the drilling pattern shown at right. Note pile of Hercules Coalex cartridges in left foreground of photo.

level of the sludge pit and pond. There is a difference of 95 feet in elevation between the upper end of the empty track and the lower end of loaded track which makes it possible to establish easy grades for handling railroad cars. Empty car tracks were laid on a ladder pattern to minimize curvature.

Gob is hauled from the plant by a Dart 16-yd. dump truck to the pit and dumped where coal has already been removed. An international 9½-yd. dump truck is used as a spare to haul either gob or coal as needed. Both trucks haul coal on the return trip to the preparation plant. Also used at the mine for utility hauling is a 1½-ton Ford dump truck.

Large Reservoir

Water for the preparation plant is pumped from a 35-acre reservoir, varying from five to twenty feet deep, on the mine property. The sludge-pond is about five acres in area and an additional five acre pond will soon be added at the west end.

Overburden, composed of varying thicknesses of shale and sandstone under surface clay and loam, is prepared for excavation by shooting with fixed explosives charged in 10-in. holes drilled by electrically powered churn drills. A Bucyrus-Erie 42-T and a Loomis 88 sink holes in a 27x30-ft. pattern, at present 60 to 70 feet to the coal seam. The Bucyrus-Erie machine, swinging a 31-ft. 7-in. stem on 7/8-in. American Steel & Wire rope, drills an average of nine holes in 24 hours. The Loomis rig, using a 21-ft. 5-in. stem on 3/4-in. American Steel & Wire rope, puts down five holes in the same period of time.

After filling in with dirt to about 12 inches above the coal seam, holes are loaded with about 700 pounds of Hercules Coalex cartridges in three decks. On each deck is lowered 12 pounds of Hercules 30 percent gelatin primer. Firing is by a Hercules electric blasting machine through two No. 6 blasting caps on each of the top and middle decks and two delay caps on the bottom load. Bits are changed once a day and taken to the main maintenance shops to be sharpened on a Bucyrus-Erie No. 6 bit dresser.

Common practice is to blast once every 24 hours, usually at night. In order to prevent interference with loading, the usual procedure is to shoot against one progress move, or 50 feet of material. From one to six holes are shot at one time. Coal is shot only in very brief periods in some winters when so much moisture has frozen in the coal that the loading shovel cannot break it satisfactorily. For this purpose, 2-in. holes are drilled with a small wagon drill constructed on the job,

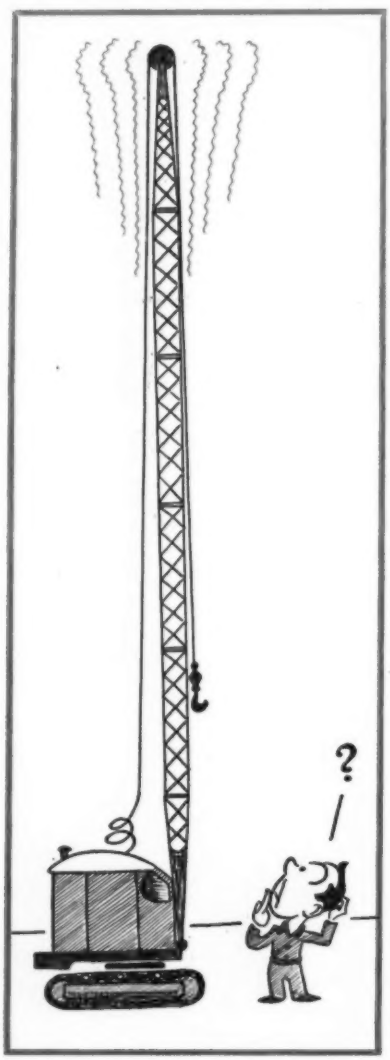
(Continued on page 288)

•Twenty five yards of rock overburden comes up the bank as ground man watches.

Effective leadership of safety-minded chief executives in a safety program developed and inaugurated by management can keep employees continually conscious of the need for safe practices while working around construction equipment.

SAFE USE of Heavy Duty Equipment

BY R. A. BECKWITH
Vice President and Chief Engineer
Koehring Company



• A boom raised so high it will not return by gravity requires a carefully planned procedure to bring it down safely.

THE QUESTION of safety in connection with the use of heavy construction equipment is not an art acquired simply by giving and receiving orders—safety starts at the top. The employee through training suggestions and leadership must be continually conscious of the tremendous importance of safety conduct while working around heavy contracting equipment.

In approaching the development of a safety minded organization, management must play the first card. The chief executives must be thoroughly in accord with the safety program developed since they can only pass on to the minds of their workers safe conduct practices with which they are definitely in agreement. Such a program might be developed around a number of basic machine handling practices.

1. *Inexperienced operators.* Inexperienced operators or new operators assigned to equipment with which they are not familiar should never be allowed to take over a full shift or a day's run on first assignment without passing through a partial day's work under direct and close supervision of an experienced operator. Many accidents have occurred with equipment in the hands of new men, who were uninstructed and had become mentally and physically fatigued.

2. *Fatigue.* Many accidents are attributed to fatigue. Many operations where great physical exertion is in effect, and especially where lack of alertness might injure the subject himself or his co-workers, should be studied by major executives. We all know that there is a definite relationship between accurate operating judgment and the mental and physical fatigue of an individual.

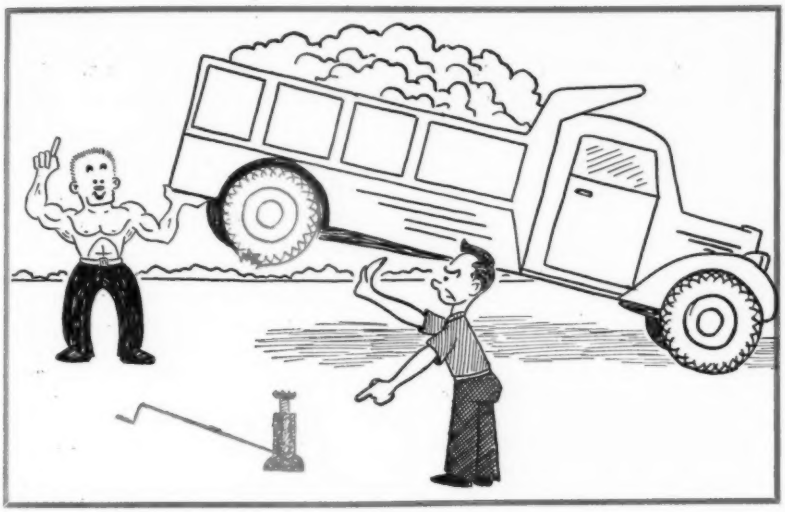
3. *Authority for safety operating orders.* Many serious accidents could have been avoided if the operator of the equipment had acknowledged the signal of approaching danger from someone not in authority. Although an operator usually is reluctant to take orders from anyone beneath him in authority, he should be so fully aware of influences of danger that he is prepared to take preventive steps when warned by a bystander. We have known instances where the operator has deliberately acted contrary to signals from a workman who saw approaching danger, resulting in a serious accident. Signals from anyone should always be considered around moving machinery when danger is imminent.

4. *Idle motor or moving machinery on standing equipment.* No piece of equipment mounted on wheels or crawlers should be left running on an inclined surface in the absence of the operator, since all such equipment may start moving if it stands on loose material. The operator should never leave his station with pay load or live attachments of any kind off the ground.

5. *Maintenance on the machine with power units in operation.* There are very few pieces of equipment where maintenance work should be done while the motor is running. An idling motor has more vibration than one under load. The vibration can partially throw in clutches, release safety pawls or, perhaps, encourage the releasing of back locking toggle clutches that may be supporting a load or holding part of the equipment in position.

6. *Equipment set in motion.* Any truck or crane that has been standing idle for any length of time on jobs where workmen are in numbers should never be started in motion without some prearranged signal. Men working around such equipment may be frightened at the first movement and should be warned first by some set signal, and then by a very slight movement of the machine. A carefully established plan of warning should be followed, putting the responsibility for execution into the hands of one individual. Everyone should know who he is and look to him. Signal bells or horns have proved to be very ineffective when they are used frequently and as the only means of warning. In such instances, warning contact arrangements are more desirable—brush guards for example. Guarded rotating members, fans, rotating open keyway shafts are also important items.

7. *"Showoffs" not wanted.* In all construction work where heavy equipment is in use, there are men who take a great deal of pride in exhibiting their physical strength. Such men should be subjected to an educational program showing that exhibitions of this type are not appreciated by their co-workers and often result in the injury of an innocent bystander. Men referred to as "showoffs" are men who usually don't know how to exercise good judgment. Good judgment is less spectacular.



• "Showoff" exhibitions of physical strength are not appreciated by co-workers and a serious injury is often the end result.

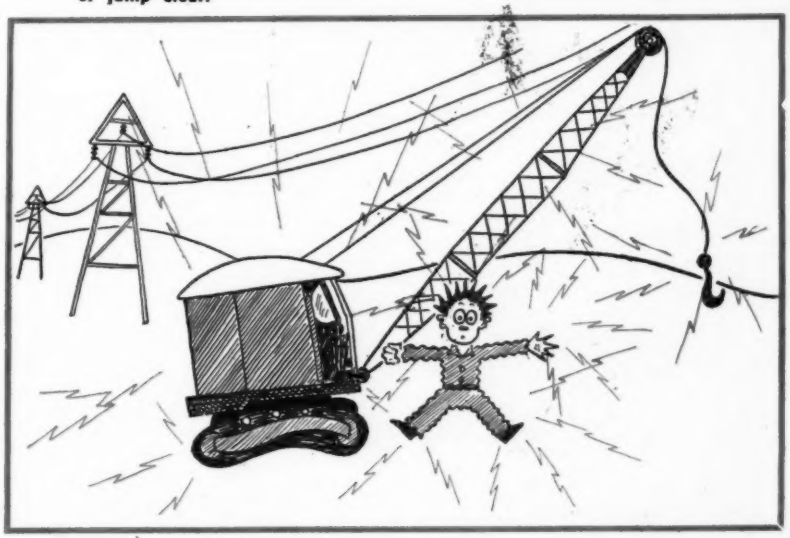
• Below: When a boom or cable touches a high tension wire, the operator should either "stay put" or jump clear.

Mr. Beckwith's article is an outgrowth of his recent speech "Safe Use of Heavy Duty Equipment on Construction Jobs" given before the National Safety Congress at its 34th annual meeting in Chicago.

8. *Lifting long booms.* Extra long booms should not be lifted from the horizontal position or from the ground without referring to the manufacturer's specifications for the boom length limit which can be lifted from the horizontal position using a given "A" frame. There is a definite relation between the "A" frame supplied with a machine and the maximum boom length permissible. The loading on the structural members is greater in a long boom when lifting the boom from a horizontal position with a low "A" frame than the loading when handling the maximum load as represented in the lifting capacity charts. The maintenance crew should be fully acquainted with these rules before making drastic changes in boom equipment.

9. *Vertical boom not returning.* If an operator has raised a boom so high that it will not return by its own gravity—a practice which should certainly be avoided—the situation should be studied *very carefully* before remedial action is taken. The operator should immediately warn anyone in the rear of the crane to vacate the space, then he might elect to attach his hoist line to some rigid

(Continued on page 296)



Large Dragline Floats to Work at Boulder Site

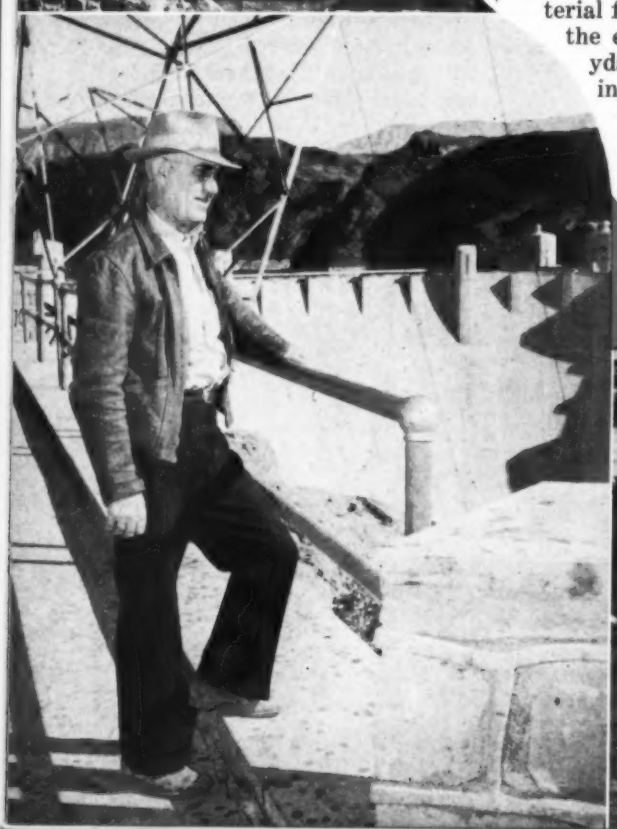
By C. E. FERGUSON
Mechanical Superintendent,
Guy F. Atkinson Company

A 140-TON barge built on the project for this particular job was an important tool used by Guy F. Atkinson Company to perform an 825,000 cu. yd. channel clearance project below Boulder Dam. The 40 x 80 x 9 ft. barge was used to receive parts of a 5-yd. Bucyrus-Erie 120-B dragline from the highline. After assembly on the barge, the dragline was transported from one side of the river to the other to perform excavating work.

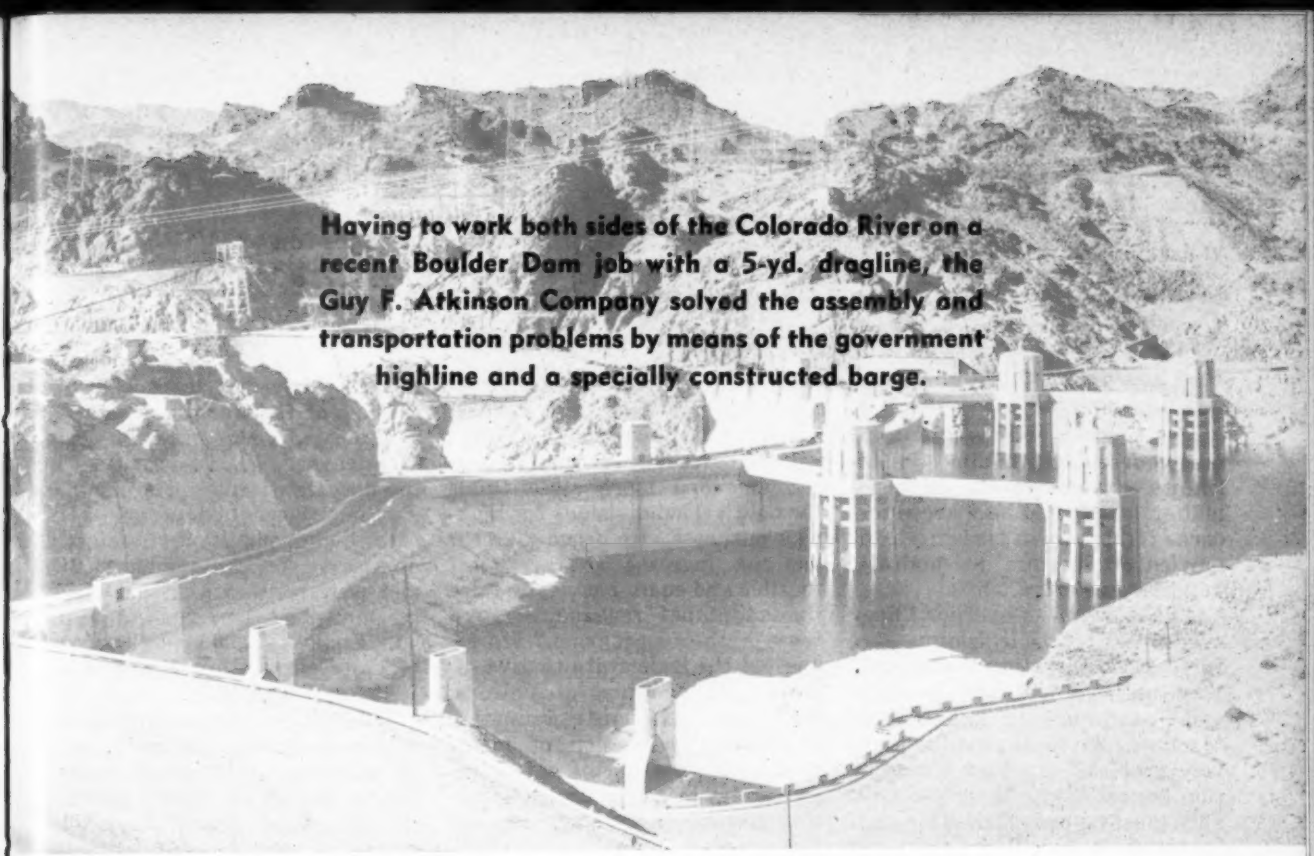
Atkinson's contract price of $2,586,450 covered excavation of 550,000 cu. yds. of loose fill on the river banks of Black Canyon and removal of 275,000 cu. yds. of material from the river channel; the excavation of 2,600 cu. yds. of concrete in existing tunnels; the placing of 43,000 cu. yds. of reinforced concrete; and one-half mile of highway relocation. The height of the canyon walls at this point required a vertical lift of 550 feet for disposal of all material and complicated the spotting of excavating machinery.

Largest piece of equipment used on this job, the 5-yd. dragline was shipped on standard railroad cars which were spotted on the project's spur track at about the same level as the top of the dam. Revolving frame, lower frame, boom and miscellaneous equipment were unloaded by the government highline and each assembled nearby as completely as possible. The highline then took each major assembly out over the river channel and lowered to the barge which had previously been spotted below.

The dragline's revolving frame was mounted on the lower works by use of a double strong back mounted on the barge. The work of exact positioning so that the center pin could be inserted was facilitated by four Beebe hoists, one attached to each corner of the revolving frame. With the cen-



• Under supervision of the author (left), the 5-yd. dragline was lowered (left above) to the special barge on which it was assembled.



Having to work both sides of the Colorado River on a recent Boulder Dam job with a 5-yd. dragline, the Guy F. Atkinson Company solved the assembly and transportation problems by means of the government highline and a specially constructed barge.

ter pin secured, the boom was lowered from the upper level and assembled to the machine. All loose parts, ballast and accessories were lowered in the same manner and stored on the barge to be assembled later. Assembly was completed with the assistance of a Bucyrus-Erie 54-B crane after the barge was towed to a dock 1,000 feet down stream on the Nevada side.

Ready for work the dragline was floated on the barge to the Arizona side of the river, where it transferred from barge to shore on a pair of mats 8 ft. wide by 40 ft. long, fabricated from 9 in. by 18 in. timber. After completion of excavation work, the dragline was dismantled and removed by the Highline, the 150-ton U. S. B. R. permanent installation, used to install power equipment during construction of Boulder Dam.

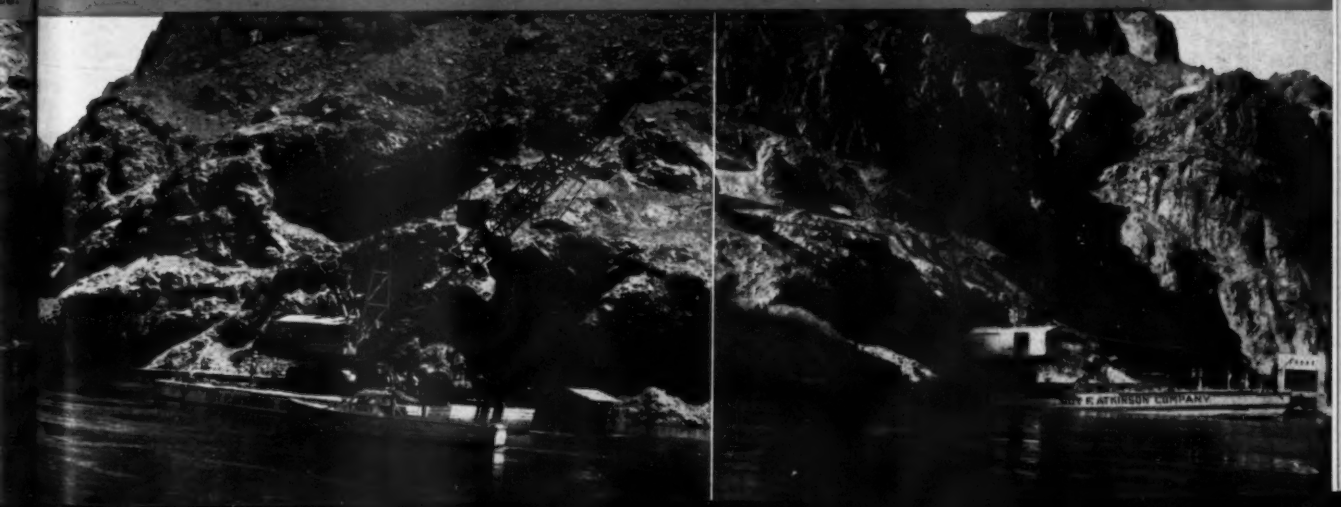
In general, the purposes of the work done by Atkinson Company were to remove all loose fill from the river and canyon walls below the dam and to alter the outlets of the dam for the purpose of improving flow characteristics of the spillway tunnels. About four feet of head was recovered by the lowering of the tailboy elevation.

In the past, discharges through the spillway tunnels have caused slides in the vicinity and if continued, could have made the tunnels inoperative. Elimination of loose fills on the Arizona and Nevada banks will prevent sloughing of such material into the river channel in event of future flood waters.

A disposal area on the Arizona river bank, most accessible to the work due to the character of the topography, was selected for wasting material excavated by the

(Continued on page 288)

Unloaded on the Arizona side, re-loaded (below left) by means of a special ramp, and floated (below center) to the Nevada side (below right), the dragline excavated fill on both sides of the river.



Governors on Highways

A condensation of recent gubernatorial messages on highway construction problems to legislatures of 36 states.

THIRTY-SIX state legislatures now in session have received messages from as many governors with almost unanimous attention to highway matters. Digested here are references from these messages of particular interest to highway builders and users.

ARKANSAS—Governor Laney suggested that the legislature give further consideration to the highway problem. "Better business and better roads in Arkansas go together. We must face the highway problem . . . New construction is necessary. More maintenance must be provided. This matter should be considered and acted upon in a constructive way."

CALIFORNIA — Governor Warren compared the "tragic situation" regarding "an outgrown highway system" to the housing shortage. He told the special session that highway funds will be entirely committed at the end of the biennium on June 30, 1947, and stated there will not be sufficient funds to carry out the highway program without increasing the gas tax.

COLORADO—Governor Knous recommended more state funds for political subdivisions for highway purposes. He urged a 2 cent gas tax increase as the "most feasible and equitable way to raise the additional revenue required for a highway program." He requested the legislature to give attention to adoption of uniform traffic laws, adequate examination of drivers, inspection of motor vehicles, promotion of safety engineering in highway construction and increased traffic law enforcement.

CONNECTICUT — Governor McConaughy recommended a one cent gas tax increase to carry out the state's highway development program.

DELAWARE — Governor Bacon said the problem of placing highways in the same condition as before the war is an exceedingly difficult one and "it is extremely important to replace the damage of the war years as soon as possible." Later in his message he remarked: "I . . . do not favor the making of appropriations for any new construction, unless in your judgment it is absolutely necessary for the public health and welfare of our citizens." He recommended the return to Highway Fund of $2,000,000 "borrowed" by General Fund in years of 1935, 1937 and 1939.

ILLINOIS — Governor Green said he is determined to continue to maintain a balanced budget during the next biennium without the imposition of new taxes. The regular budget includes approximately $72,000,000 for construction projects, "mostly highways." The state has launched a program of state aid for farm-to-market roads designed "to give every home in Illinois all-year access to our entire highway system." The state will share equally with the City of Chicago and Cook County, the cost of express highways in the metropolitan area.

INDIANA — Governor Gates said the highway program is five years behind schedule and present revenue "will unquestionably be inadequate to meet the department's construction and maintenance cost."

IOWA—Governor Blue recommended recodification of municipal laws with particular reference to finances for road building purposes. He urged study and revision of highway needs and said an additional three and one-half million dollars are needed to match federal funds during the next biennium.

KANSAS—Governor Carlson urged the legislature to give at-

e Western Contracting Corp., of Sioux City, Iowa, loads fill to a Euclid with a Bucyrus-Erie 2½ cu. yd. diesel shovel on Highway 52 south of Dubuque, Iowa.

tention to laws relating to qualifications of drivers and mechanical fitness of vehicles as well as the physical improvement of highways, better police controls, improved markings and public education. He called attention to the fact that an expanded highway program will cost more money and "we must raise the money to pay for them." He saw a danger of "developing a policy of using federal aid as the financial yardstick of our highway program."

MAINE — Governor Hildreth said the state is in excellent financial condition with a surplus of nearly $10,000,000 almost equally divided between the Highway Fund and the General Fund. He recommended continuation of the policy of not creating new highway debt in excess of that retired during the biennium.

MARYLAND—Governor Lane stated, "We have reached the time when we must consider the advisability of great, wide, high-speed highways, such as the Pennsylvania Turnpike and the fine parkways over which the traffic flows between the States of New York and Connecticut. The only practical way to finance such highways, as other States have found out, is by building toll roads, just as we have built toll bridges across the Susquehanna and the Potomac, and as we propose to do across Chesapeake Bay."

MASSACHUSETTS — Governor Bradford suggested that motor vehicle revenue may be adequate to finance a long range highway program.

MISSOURI — Governor Donnelly said that because of federal restrictions on construction and shortages of labor and materials, construction was almost completely abandoned during the war which resulted in the accumulation of a reserve fund of approximately $18,500,000 that is now available to match federal aid funds. This fund will enable the state to match federal funds during the next biennium, "as net highway revenues will not be sufficient for that purpose." He urged consideration of uniform laws, adoption of compulsory inspection of motor vehicles, examination of drivers and amendment of the operators' license law to provide for better enforcement. He suggested a system of staggered permanent registration of motor vehicles.

• Rebuilding a road through sugar cane fields at Colonia Ingenio, Puerto Rico—work until recently done by hand—is this Caterpillar motor grader on Goodyear tires.

MONTANA — Governor Ford urged reappraisal of the state's tax structure. He said the state is cooperating in national efforts to improve highway safety, and recommended a drivers' license law in accordance with the Uniform Code. He asked for the formation of a state safety council to further highway safety through education and cooperation.

NEBRASKA — Governor Peterson said if the legislature did not charge the state with the responsibility for the construction of local roads, it appears that the present sources of revenue are adequate for the highway program. He said he is resolved to enforce rigid economy in the highway department to "accomplish the maximum benefit to highway users."

NEVADA—Governor Pittman said with regard to highways that no additional taxation should be necessary to match federal requirements.

NEW HAMPSHIRE—Governor Dale's message included a statement that "highway access shall always be available to markets." He asked legislature to measure carefully the question of maintenance of rural roads.

NEW JERSEY — Governor Driscoll indicated that he favored lightening the property taxes of municipalities for highway purposes. The State Highway Department should continue to develop program to carry state highways through or around large cities. He is preparing a plan which will support the highway program with the use of all present highway revenues for highway purposes, maximum use of Federal aid and a re-examination of license fees on trucks.

NEW MEXICO — Governor Magbry said that the State must go on with the building and improvement of State highway and farm-to-market roads and that in order to do this it will be necessary to issue additional highway debentures.

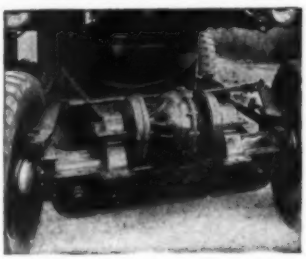
NORTH CAROLINA—Governor Cherry called for full speed ahead on the ten-year secondary road improvement program (instituted two years ago to surface 3,000 miles of secondary roads each year) and that such a program will well-nigh exhaust highway funds. Hence, the State cannot afford the diversion of highway money and he recommended the repeal of the statutory provision authorizing the application of the sales tax to the proceeds of gasoline tax collections. He called for enactment of a strong highway safety program with an increase in the number of highway patrolmen, for re-examination of drivers' licenses, adoption of a financial responsibility law, periodic inspection of motor vehicles and driver training courses in all high schools.

NORTH DAKOTA—Governor Aandahl asked approval of legislation to increase by 25% the initial fee on car and truck licenses (with annual reductions of 5% per year instead of 10%, and

(Continued on page 286)

Equipment you ought to KNOW ABOUT

Hydraulic Steering



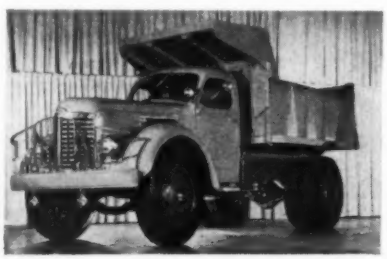
Manufacturers: American Steel Dredge Co., Inc., Wayne Crane Div., Fort Wayne, Ind.

Claims: All Wayne Crane units used as a shovel, trench hoe, dragline, clamshell or crane are now being shipped with hydraulic steering. A lever control operates a 4-way valve which includes a built-in relief valve. The 4-gallon hydraulic fluid tank with a Vickers filter and pump has a capacity of 4 g.p.m. at 1000 lbs. with the relief valve set at 500 lbs., and operates at a normal pressure of 250 lbs. Pressure lines enter a rotating joint, pass through the vertical propel shaft and into a hydraulram. The hydraulic mechanism powers a heavy steering linkage and eliminates muscular efforts in steering.

International Model KBR-11

Manufacturer: International Harvester Co., Chicago, Ill.

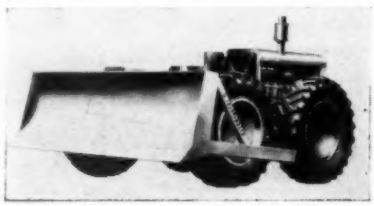
Claims: The model KBR-11 truck is available with wheelbases of 149, 161, 179, and 197 which makes possible the selection of the right unit for every heavy-duty hauling job. A variety of coal bodies can be obtained in both welded steel and aluminum alloy for use with the truck which is powered with a 451 cu. in. displacement valve-in-head Red Diamond engine. The truck is equipped with air-operated brakes for smooth, straightline stops. Included as optional equipment are direct-in-fifth or overdrive-in-fifth transmissions, and double reduction or two-speed rear axles.



Tournadozer

Manufacturer: R. G. LeTourneau, Inc., Peoria, Ill.

Claims: This rubber-tired Tournadozer, Model C, is the first machine of its kind to make its appearance in the heavy equipment industry. Engineered to give the speed and economies of rubber-tired equipment in the dozer field, the Model C is powered by a 160 h.p. diesel engine and has four forward speeds ranging up to 12 m.p.h., and the same four speeds are available in reverse. The operator steers by use of air-actuated disc clutches and brakes controlling the two wheels on each side, and the bowl is cable-controlled, being operated

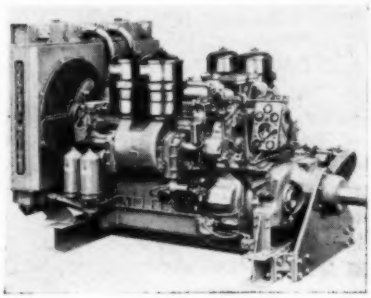


by an air-actuated power unit. Besides doing such work as clearing, pioneering, push loading scrapers, backfilling, etc., the Model C can operate over paved areas without damage.

Cable Control

Manufacturer: Caterpillar Tractor Co., Peoria 8, Ill.

Claims: A low cost rear-mounted double drum cable control unit, designated at N. 23, for use with the company's D6 and D7 diesel tractors. Designed to develop line pulls ample to meet service requirements imposed by the operation of scrapers, bulldozers and rippers, the new cable control provides smooth operation with a minimum of adjustments.



Diesel Engine

Manufacturer: Detroit Diesel Engine Div., General Motors Corp., Detroit, Mich.

Claims: Each twin unit, of the new and improved General Motors Series 71 "Twin 6" diesel engine models, is made up of two basic GM 6-cylinder 2-cycle engines mounted side by side and geared to a single shaft. Units are offered with either right or left-hand rotation. Continuous b.h.p. at 1800 r.p.m. is 276 with maximum intermittent rating of 400 at 2000 r.p.m. A variety of power take-off arrangements is available with the engines.

Truck Trailer

Manufacturer: Rogers Brothers Corp., Albion, Penna.

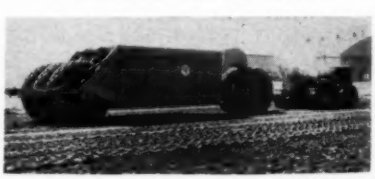
Claims: Called the Tagalong Frontloader, this trailer is designed to haul small and medium equipment and to be towed by a dump truck. Equipment is loaded from the front while the dump body is lowered and lifting sheave is engaged. When the truck body is elevated, the towing tongue is inserted. The trailer is available in 10, 15, and 20-ton capacity sizes.

Compaction Unit

Manufacturer: The Southwest Welding & Machinery Co., Alhambra, Calif.

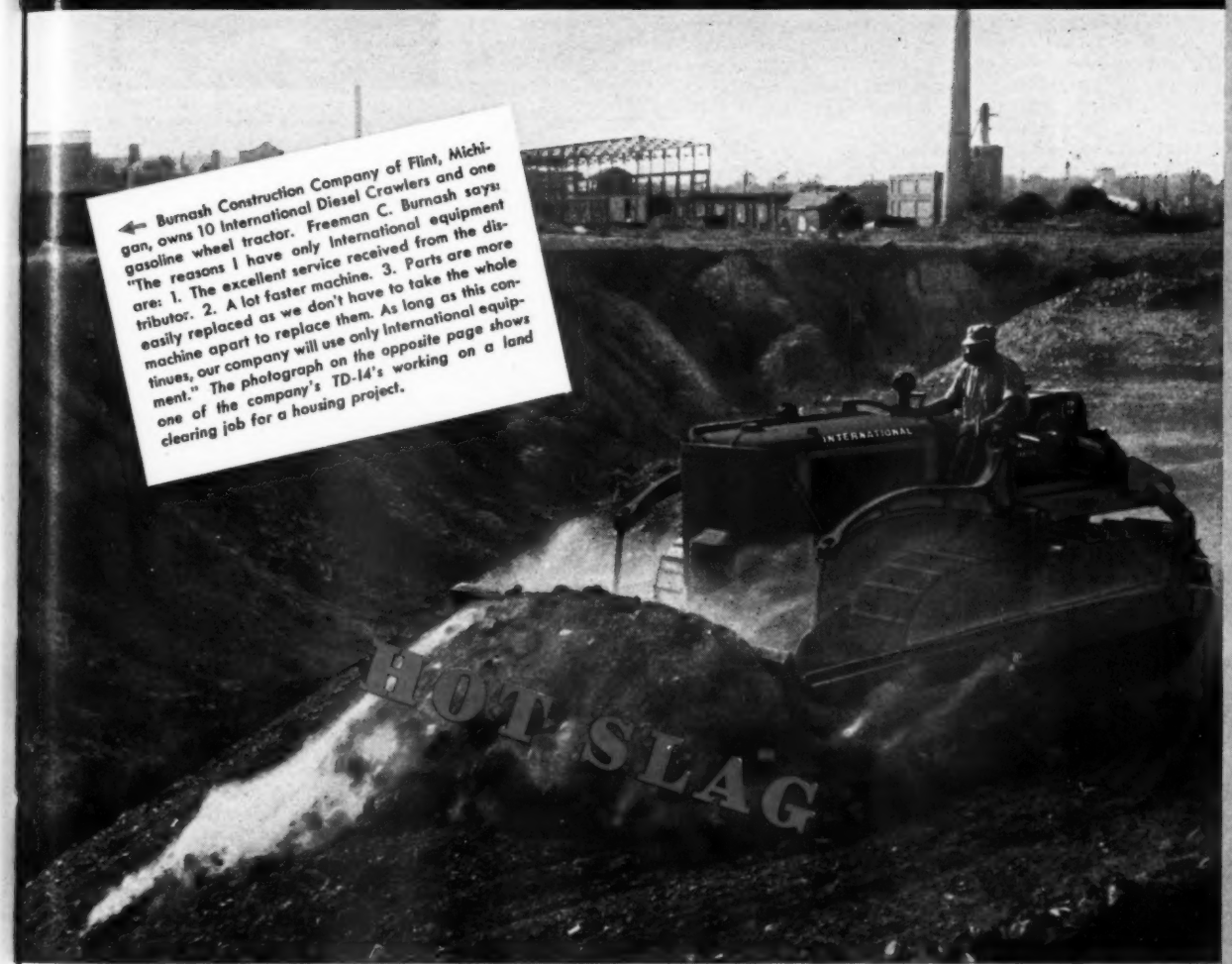
Claims: This new compaction

(Continued on page 302)



for Every Job

Diesel Crawlers



← Burnash Construction Company of Flint, Michigan, owns 10 International Diesel Crawlers and one gasoline wheel tractor. Freeman C. Burnash says: "The reasons I have only International equipment are: 1. The excellent service received from the distributor. 2. A lot faster machine. 3. Parts are more easily replaced as we don't have to take the whole machine apart to replace them. As long as this continues, our company will use only International equipment." The photograph on the opposite page shows one of the company's TD-14's working on a land clearing job for a housing project.

Tune in James Melton on "Harvest of Stars" every Sunday, NBC Network

↑ In Cleveland W. E. Plechaty's two International TD-14 Diesel Crawlers saved time and cut costs of moving hot open-hearth slag to fill a 5-acre hole for a building site. 18 carloads are handled each day.

INTERNATIONAL HARVESTER

Industrial Power

Shots from the FIRING LINE

Peak in Building Costs Reached According to Survey

Fifty-three per cent of 286 general contractors in all parts of the country polled by F. W. Dodge Corporation, a fact-finding organization of the construction industry, believe that the peak in construction costs has been reached.

In some areas, notably in New England, the South Atlantic states and the East South Central states, opinion was at least 2 to 1 that costs had attained their highest level.

Only in the Pacific states was opinion general that the peak had not been reached, and here further cost climbs ranging from 11 to 12 per cent during the current calendar year were expected.

The minority, or 126 general contractors, believe that further increases can be expected, the average increase anticipated by them being 8.7 to 10.2 per cent above current levels.

Prices Leveling Off

At the same time the poll indicated that prices for most building materials, with the exception of lumber, Portland cement, structural steel and cast-iron soil pipe and fittings, have tended to remain stable since January 1.

More than half of the contractors reported prices stable for all except two items: lumber and Portland cement. Lumber costs have declined in some areas with the over-all trend stable to downward, while Portland cement, structural steel, cast-iron, soil pipe and fittings have tended to increase since the first of the year, the Dodge survey shows.

The other items, mentioned most often as having remained stable since January 1, in the order of stability reported, are: structural clay tile, brick, building blocks, clay sewer pipe, building plaster, warm-air furnaces, hardwood flooring, and cast-iron radiation.

Wage Increase General

Forty-three per cent of the contractors reported that the average wage of some building craftsmen in their respective areas of operation had increased since the first of the year, and seventy-six per cent said that they expected increases later in the current building season. The amount of the increases varied but 10 per cent was most frequently mentioned as the average wage increase of craftsmen effectuated since January 1 or expected this spring.

In general, wage increases since January 1 are most frequently reported to have become effective in the Middle Atlantic states, the West South Central states and the Pacific states. Anticipated increases are frequently reported in all areas excepting the East South Central states of Kentucky, Tennessee, Alabama and Mississippi. In this latter area, for example, 45 per cent reported that increases have already taken place, and 45 per cent said increases will take place in the average wage level of craftsmen within the next few months.

• Bucyrus-Erie ½-cu. yd. dragline digging 15-inch drainage canal two miles long for Getman Bros., South Haven, Mich. The machine does all excavating and trims slopes of banks to finished job. No hauling units were needed.

• Hamer Brothers, Inc., Detroit, Michigan, recently utilized this unusual arrangement to haul and spread dirt on an extensive right-of-way grading job for the Grand Trunk Western Railway Company, in lieu of air dump car operations more normal to such work. A 1½ yd. Thew dragline was used to load an eight-car work train of revamped large flat cars. Side boards, 4 x 6 ft., were erected along one side of the cars with hinged wooden aprons opposite which extend 52 inches outside the wheels, and cars were connected by steel runways. Cars were unloaded by a Caterpillar diesel D-6 tractor with bulldozer which rode atop plateau deck. An average load of 330 yds. of dirt was deposited in 20 minutes by this method.

High Cost Factors

General contractors, by extremely high majorities, reported that the following unusual factors contribute to the high costs of building at present:

1. Labor inefficiency caused by irregular flow of materials, 239 to 22.
2. Delays in construction owing to inadequate supply of skilled workers, 209 to 39.
3. Excessive expenditures of time in shopping for and obtaining materials, 197 to 53.

Many general contractors reported that the greatest contributing factors to high present-day costs were the low productivity of building mechanics, the low level of skill of some craftsmen, and the failure of workers to do "a day's work for a day's pay."

Respondents in general said that they expected improvement in these retarding factors, many in the next year or two, but the consensus was that improvement would come only when the supply of materials and the numerical and qualitative strength of the labor force was adequate to meet the demands for construction.

Construction Drop Expected

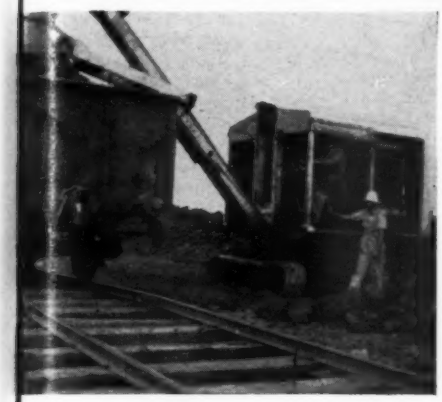
The consensus, 175 to 66, was that there would be a drop in the current high rate of contract letting before the industry attains continuous recovery. The majority felt that costs would stabilize below present levels; the average expected construction cost drop was 14 per cent, as computed from responses of those anticipating that stabilization

would occur at levels below those of the present time.

Skilled-Worker Shortage

There is a shortage of skilled craftsmen in some trades in all regions, with varying intensities, the survey shows. The most acute shortages are generally reported to be among brick masons, carpenters and plasterers, with frequently reported shortages of plumbers, electricians, especially in the East and Middle West, and lathers, except in New England and the South Atlantic States.

Only thirty-one general contractors of all those polled indicated there were no shortages in any trades in the areas where they operate. The most intensive shortages of craftsmen were in the East North Central states of Ohio, Indiana, Illinois, Michigan, and Wisconsin, followed by the Middle Atlantic states of New York, New Jersey and Pennsylvania, and the West North Central states of Minnesota, Iowa, Missouri, North and South Dakota, Nebraska and Kansas. The least shortages were reported in the West South Central region composed of Arkansas, Louisiana, Oklahoma and Texas.



• **Solving one of the problems of coal shipment in Australia, is Roche Bros. (Melbourne) ⅜-yd. Ruston-Bucyrus shovel shown loading coal which is being transferred at Loodonga from 4 ft. 8½ in. gauge cars of the N. S. Wales railway to 5 ft. 3 in. gauge of the Victorian railway.**

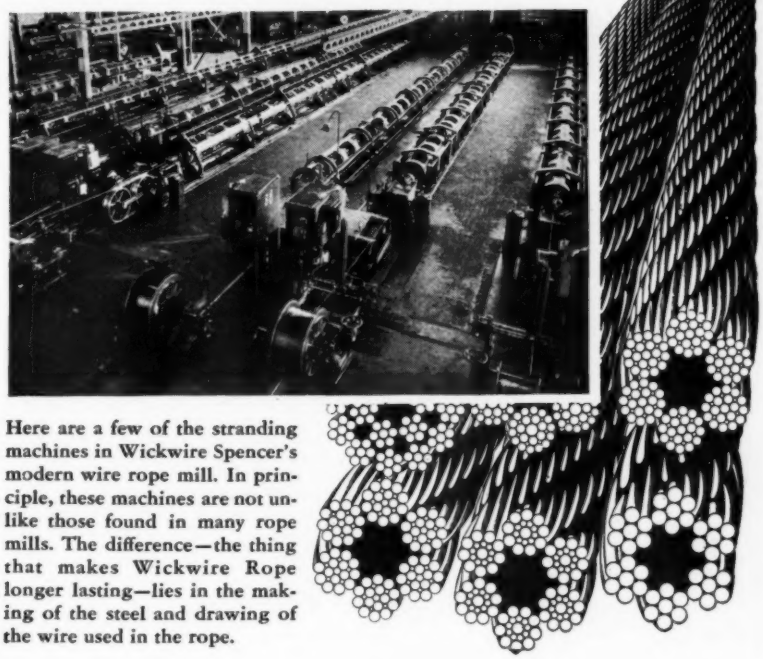
Productivity of Workers

The majority of general contractors do not beleive that productivity per man hour of on-site workers will be increased in 1947 as compared with 1946, while at the same time few believe it will be less than last year. As to productivity per man hour this year compared with last the summary of opinion shows it will be: more, 106; less, 25; same, 140. However, a majority of contractors in New England, the Pacific states and the West South Central states said they expected higher productivity this year over last.

Lump-Sum Bidding

In the aggregate, the general contractors reported that 34.6 per cent of

Buy the ROPE backed by the KNOW-HOW



Here are a few of the stranding machines in Wickwire Spencer's modern wire rope mill. In principle, these machines are not unlike those found in many rope mills. The difference—the thing that makes Wickwire Rope longer lasting—lies in the making of the steel and drawing of the wire used in the rope.

Only steel wire with the highest possible degree of perfection in hardness, strength, toughness and fatigue-resistance is used. And every wire used in making Wickwire Rope is drawn until it's accurate within a fraction of a thousandth of an inch.

Distributors and Wickwire Rope engineers in all parts of the country are prepared to render prompt service in solving your wire rope problems and meeting your wire rope needs. Wickwire Rope is available in all sizes and constructions, both regular lay and WISSCOLAY *Pre*formed.

VALUABLE GUIDE FOR ALL ROPE USERS—Thousands of wire rope users have found that the information packed in the 82 pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. This easy-to-read, profusely illustrated manual is free. For your copy write, Wire Rope Sales Office, Wickwire Spencer Steel. Palmer, Mass.

CF&I & SUBSIDIARIES

WICKWIRE ROPE

A PRODUCT OF WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass.
GENERAL OFFICE—500 Fifth Avenue, New York 18, New York
SALES OFFICES—Abilene (Tex.) • Boston • Chattanooga • Chicago • Denver • Detroit Philadelphia • Tulsa • Fort Worth • Houston • Newport News • New York
PACIFIC COAST—The California Wire Cloth Corporation, Oakland 6, California

their present work, by dollar volume, is being done on a lump-sum basis, while the remainder is being done on cost-plus-fixed-fee contracts.

Award 4 Million Dollar Contract at Granby Dam

Construction of the Granby Pumping Plant on the Bureau of Reclamation's Colorado-Big Thompson project in Colorado has been placed under $4,139,998 a contract awarded to the Granby Constructors, Colorado Springs, Colorado, the low bidders.

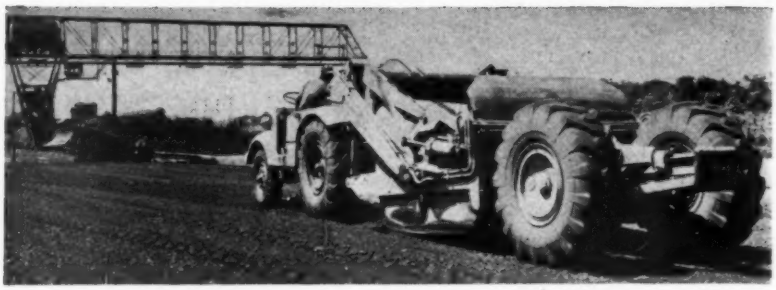
The pumping plant will be built between Granby and Grand Lake, Colorado, southeast of U. S. Highway 34. It will pump the water that will be transported from the western slope of the Rocky Mountains to the eastern slope through the 13-mile Alva B. Adams tunnel under the Continental Divide. More than 600,000 acres of land on the eastern slope will be benefited and insured against crop failures in dry seasons. The plant is scheduled to begin operations in November 1949.

Meanwhile, water users on the eastern slope of the Rockies have pledged $115,000 to construct a 38-inch temporary pipeline from the eastern portal of the Adams tunnel to the Big Thompson River to permit diversion of 125 million gallons of water daily so as to get irrigation water without waiting for the completion of the project distribution works.

Major items of construction under the contract include about 973,000 cubic yards of excavation, more than 468,000 cubic yards of fill and backfill, placing of about 18,500 cubic yards of concrete, and installation of 734 tons of cranes, runways, gates and other metalwork.

The Granby Constructors is a joint venture composed of six firms from three states: Condon-Cunningham Company, Wunderlich Contracting Company, Peter Kiewit Sons Company, and Grafe-Callahan Construction Company, all of Nebraska; Brown and Root, Inc., Texas, and Ed. H. Honnen Construction Company.

The plant must be completed in about 23 months.



• Caterpillar diesel tractor and LaPlant-Choate scraper, both on Goodyear tires, transport and spread coal for reserve stock piles of the Electric Generating Company power plant at Powerton, Ill.

Philippine Rehabilitation Work Offered to Contractors in U.S.

American contractors can undertake construction work in the Philippines under the Rehabilitation Act of 1946 on an equal footing with Filipino contractors, Thomas H. MacDonald, Commissioner of the Public Roads Administration, Federal Works Agency, announced recently. The announcement is based on a recent opinion of the Philippine Secretary of Justice.

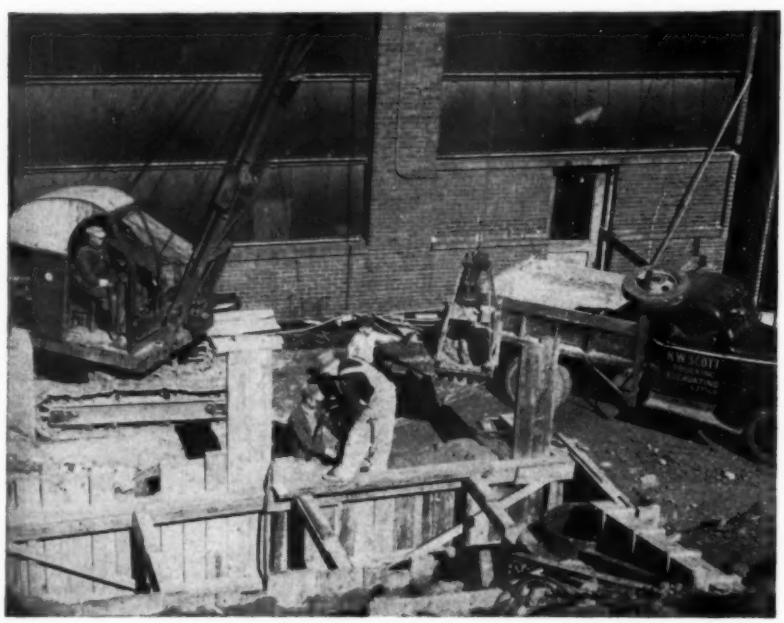
In public works undertaken exclusively at the expense of the Philippine Government, Filipino contractors are legally entitled to preferential treatment. However, the Secretary of Justice has stated that these preferential laws do not apply to public works, undertaken under the Philippine Rehabilitation Act, which will be financed entirely by the United States Government or jointly by it and the Philippine Government. For such work, American contractors will have equal status with Filipino contractors in qualification for bidding, determination of the low bidder, and award of contract.

The Secretary of Justice also ruled that American contractors will be permitted to take equipment and supplies to the Philippines subject only to the same taxes as those imposed on Filipino contractors. Under recent free trade legislation and by agreement between the Public Roads Administration and the Philippine Government, no import taxes will be levied on equipment and supplies taken to the Philippines by American contractors for use in road construction under the Philippine Rehabilitation Act. Contractors may also take key personnel to the Philippines without regard to immigration quotas.

For contracts financed entirely by the Philippine Government, foreign contractors are required to employ a registered Filipino engineer to be in complete charge of the work. American contractors are released from this requirement when engaged in work under the Rehabilitation Act. American contractors will be accepted as qualified for submitting bids on road and bridge construction under the Rehabilitation Act if they are considered qualified and acceptable in the United States by the Public Roads Administration.

Ten million dollars has been allocated for highways in the fiscal year 1947 in the Philippine rehabilitation program. Eighteen construction projects have been approved so far, at a total estimated construction cost of $4,285,500. Included in this approved program are four projects for high-type pavement construction, totaling 21 miles in length, and ten projects for 25 bridges ranging in span from 23 to 336 feet. The approved program also includes four force-account projects for bituminous mat and seal, totaling 29 miles in length, which are already under way.

The first of the projects to be handled



• Preparing the foundation for a new addition to the Hammermill Paper Company plant at Erie, Pa., is this ⅜-yd. Bucyrus-Erie clamshell-crane loading to an International truck.

by contract was advertised for bids on March 20. It is expected that projects of large size or particular interest to American contractors will be announced in this country at the time they are advertised.

WAA Surplus Machinery To Be Sold on New Basis

A new and continuous program to expedite the disposal of surplus government owned parts for construction, farm, mining and some industrial machinery and equipment and their attachments valued as high as $75,000,000 is ready to be launched, according to a recent War Assets Administration announcement.

For the first time since surplus machinery parts have been sold, they will

• McCleod Construction Company is putting in a network of drainage canals for a cattle pasture near Orlando, Fla., with this Koehring 304 dragline powered by a 3-cylinder General Motors diesel engine. The water table in this area is only two to three feet below soil level.

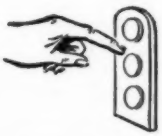
be offered on a sealed bid basis and offered concurrently to all priority and non-priority groups. This will be a continuing program and priority groups and other eligible buyers will be notified and invited to bid on the offerings.

Surplus items included in this sales program are: parts for internal combustion engines; air motors; compressors and dry vacuum pumps; pumps; portable crushing plants, paw and roll; portable screening plants; portable bulk conveyors; farm elevators; industrial type cranes, derricks, hoists and winches; agricultural machinery and implements; mining and quarrying ma-

I was looking ahead when I bought a 3½ H.P. AIRCOOLED Sheppard Diesel

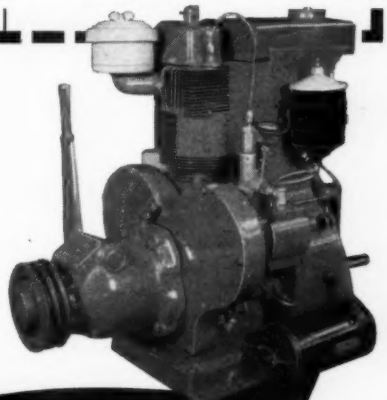
THERE ARE *cheaper engines. But, the rugged little Sheppard will be going strong long after the others would have worn out.*

NO ELECTRICAL IGNITION . . . *no carburetor . . . means a minimum of servicing and lower maintenance costs. Looking ahead over a period of years — that's important.*



BEING A FULL DIESEL, *the Sheppard starts easily and operates efficiently on low-cost domestic furnace oil. It produces no harmful or explosive fumes.*

I LOST *a plant when a spark ignited a fume-filled room. It won't happen again . . . not with the Sheppard on the job. That protection alone more than justifies its cost.*



The model 14 Aircooled Sheppard is available as a power unit or direct connected to a 2,000 watt generator. See it at your nearest Sheppard Distributor. We will forward his name on request. Also literature with complete specifications available.

R. H. SHEPPARD CO., INC.
34 Middle St., Hanover, Pa.

Sheppard DIESEL

DIESEL'S THE POWER . . .
Sheppards' the 'Diesel

Generating Sets • 2,000 to 36,000 watts
Power Units • 3½ to 56 continuous H. P.

chinery; earth and rock boring and drilling machinery and accessories; well and blast hole drilling machinery; excavating and dredging machinery; road and airport construction and maintenance machinery; tractor-mounted construction equipment; mixers and pavers, bituminous and concrete and related equipment; railroad construction and maintenance equipment, power driven (except inspection and maintenance railroad cars); miscellaneous construction and related equipment; tractors; horsedrawn vehicles; farm trailers; or rubber covered agricultural machine rolls; wooden wagon and farm machinery parts and street-sweeping machine brooms.

The largest inventories of these items are located at Granite City, Ill., Engineer Depot (St. Louis Regional office); Columbus, Ohio, General Depot (Cincinnati Regional Office); Joliet, Ill., Naval Depot (Chicago Regional Office), and the Los Angeles and San Francisco regional areas.

Each lot of parts offered will not exceed $25,000 (original cost to the government). However, the lot can be offered in amounts small enough to interest small buyers, according to WAA.

DREDGES

HYDRAULIC
DIPPER
CLAMSHELL

Bolted sectional steel hulls for landlocked, inland waters

If you need a dredge, write us!

AMERICAN STEEL DREDGE CO. INC.
FORT WAYNE 1 · INDIANA · U.S.A.

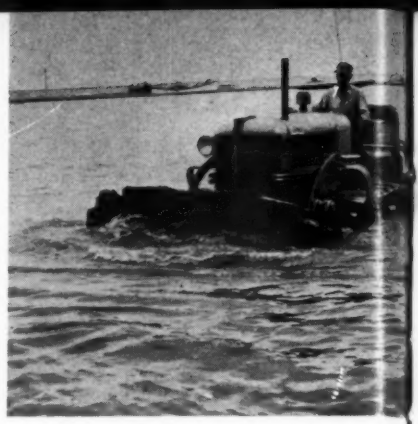
DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

Announce A.G.C. Meetings

Times and places of future meetings of The Associated General Contractors of America have been announced by managing director H. E. Foreman as follows:

Spring meeting, governing and advisory boards, Seattle, Washington, May 19-21, 1947 in the Olympic Hotel.

Fall meeting, governing and advisory boards, Des Moines, Iowa, September 28—October 1, 1947 in The Savery Hotel.



• When the radiator fan blade starts to throw water, the operator of Pete Johnson's (Marinette, Wisconsin) Allis-Chalmers HD-7 tractor knows he is deep enough. Here, the General Motors powered machine works in water dredging and clearing a small boat harbor near Menominee, Michigan, in preparation for the summer season.

29th Annual Convention, Dallas, Texas, February 9-12, 1948 in the Baker and Adolphus Hotels.

For the meeting in Seattle, the association's chapters in Idaho, Montana, Oregon and Washington will be the hosts. A northwest branch committee has been selected, of which A. L. Atherton is chairman and C. W. Erickson is co-chairman. Both are from Seattle, President of the Seattle chapter is John H. Sellen.

For the meeting in Des Moines, both of the association's Iowa chapters will be the hosts. Presidents of the Iowa Chapters are: T. L. Sears and R. W. Weitz.

For the convention in Dallas, The Dallas chapter will be host. A general convention committee has been appointed, headed by Hal C. Dyer. President of the chapter is D. H. Cowdin.

Begin Work on 10,000-Ft. Tunnel Through Rock at Coulee

The 10,000-ft. Bacon Tunnel of the Columbia Basin Irrigation Project in Eastern Washington is being driven simultaneously from both the intake and outlet portals.

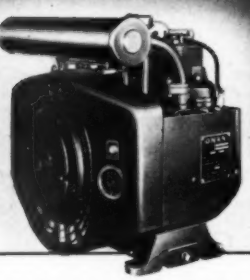
Crews of T. E. Connolly Co., Inc., which holds the contract for driving the 24-foot-diameter bore through a wall of solid basalt south of Coulee City, have made initial cuts on the intake pilot tunnel. They will advance toward other crews who have penetrated 2,000 feet from the outlet portal.

The outlet-portal crews, operating on an around-the-clock basis, are working in solid rock and timbering is required only in occasional "blow holes," or loose-rock formations encountered in the extremely tough basalt. The intake-portal men, also working three shifts, have removed several hundred cubic yards of columnar basalt near their portal to minimize the danger of slides.

Described as the largest irrigation tunnel in the Pacific Northwest, the

SMOOTH POWER *Two-Cylinder*

The NEW ONAN
AIR-COOLED
10 H.P. 4 CYCLE
"CK" ENGINE



A new, light, compact, easily-installed engine of wide power range. Completely "De Luxe" equipped, easy-to-get-at controls, and many other *plus* points. Prompt delivery on early orders.

ONAN ELECTRIC PLANTS—A.C.—350 to 35,000 watts in standard voltages and frequencies; D.C.—600 to 10,000 watts, 115 and 230 volts. Battery chargers—500 to 6,000 watts, 6, 12, 24, 32 and 115 volts. ONAN AIR-COOLED ENGINES—CK: 2-cylinder opposed, 10 h.p.; BH: 2-cylinder opposed, 5.5 h.p.; 18: 1-cylinder, 2.5 h.p.

Onan PRODUCTS

WRITE FOR SPECIFICATIONS

- **HEAVY-DUTY CONSTRUCTION:** Short, sturdy crankshaft. Extra-large bearings.
- **SMOOTH POWER:** Opposed 2-cylinder design. Fully counter-balanced crankshaft.
- **SUPER COOLING:** Axial-flow fan delivers 600 cu. ft. of cool air per minute. Larger fin area.
- **ALUMINUM CONSTRUCTION:** High-strength aluminum castings reduce weight.
- **ELECTRIC STARTING AVAILABLE:** Built-in electric push-button or automatic starting.
- **COMPACT, LIGHT WEIGHT:** Fits into 15 x 19 x 18 inch space. Weighs only 97 pounds.

D. W. ONAN & SONS INC.
3532 Royalston Ave. Minneapolis 5, Minn.

ONAN 4-Cycle ENGINES

$3,000,000 Bacon Tunnel will have a rough diameter of about 24 feet and a finished diameter of 23 feet 3 inches. The pilot bores, being driven along the top half of the tunnel, are 12 feet high and 19 to 20 feet wide. The entire tunnel will be lined with concrete.

J. A. Terteling & Sons, who are building the northerly 7.7 miles of the Main Canal, of which the Bacon Tunnel is one unit, have begun "Schedule 3" of their $1,548,000 contract. This covers completion of the canal between the Bacon Tunnel outlet and a valley leading to Long Lake. This section of the Main Canal has a bottom width of 120 feet and will be 217 feet from bank to bank. It will have a capacity of 13,200 cubic feet of irrigation water per second, sufficient to serve 1,000,000 acres of land.

New Arkansas Highway Jobs

Among contracts which totaled one million seven hundred thousand dollars, recently awarded by the Arkansas State Highway Commission, the following contracts call for drainage, base or grading: 13.349 miles, $209,340.40, McGeorge Contracting Company, Pine Bluff, Arkansas; 9.3 miles, D. F. Jones Construction Company, Little Rock, $148,346.73; 8.6 miles, $68,799.20, Ben M. Hogan Company, Little Rock; 4.9 miles, to Hogan, $126,839.25; McGeorge, 11.5 miles, $314,873.59; 4.9 miles, S. E. Evans Construction Company, Fort Smith, $162,921.90; W. D. Jeffery Construction Company, Fort Smith, $136,910.84 contract; 2.5 miles, A. C. Campbell Construction Company, Shreveport, La., $14,551.90, and 11.5 miles to Campbell, $147,561.10.

Reclamation Engineer Joins China's Yellow River Project

Robert C. Brown, engineer on the Bureau of Reclamation San Luis project in Colorado, has left for China where he will join the program planning staff of UNRRA engaged on the Yellow River project.

Mr. Brown, on loan from the Bureau of Reclamation, will make his headquarters in Shanghai. His work, however, will be in the downstream area of the Yellow River which is to be diverted so as to relieve 2,000,000 acres from periodic floods. Through dikes and drainage the land will be reclaimed for farms and homes. More than six million Chinese live in the area affected.

The work on the Yellow River will be done under the Ministry of Agriculture and Forestry in the Nationalist Government. UNRRA is serving as consultant.

Mr. Brown's work will be that of technical advisor. He expects to engage a staff of Chinese engineers, and will remain in China through September. While there, Mr. Brown may also do some work on the rehabilitation, flood control and irrigation features of the Yangtze Gorge project, on which John L. Savage, formerly Chief Designing Engineer of the Bureau of Reclamation, is consultant.

Conference Maps Progress of Portland to N. Y. Highway

Coordinated plans for an interstate superhighway linking New York City to Portland, Me., were outlined at the Massachusetts Safety Conference by highway engineers of Connecticut, Maine, Massachusetts and New Hampshire.

Maine will complete its end of the network this year and Connecticut will fill the gaps of its 70-mile expressway in 1949, the speakers said, but little prospect was seen for early completion of the Massachusetts and New Hampshire links in the 330-mile project.

It will be several years before Massachusetts realizes a state-line to state-line superhighway, according to Philip H. Kitfield, chief engineer of the Massachusetts Public Works Department, who said: "We have to fight the Legislature every year for money. Massachusetts is behind in this program and will always be behind as long as this situation prevails."

Kitfield predicted Massachusetts will be forced to impose a higher gasoline tax to obtain adequate funds, necessary for long-range, effective planning, or stand "accused of a lot of things." He declined to estimate how much he thought the present 3-cent tax should be increased.

Current plans in Massachusetts this year, he said, call for only a five-mile improvement of the Newburyport turn-

..Bucket selection made EASY!

Just check your:

Crane Capacity ✓
Work to be done ✓
Clearances ✓

—and select EXACTLY the BUCKET you need from Catalog No. 2076

yours for the asking

You can't go wrong! Exactly the bucket you need is shown in picture and with complete data — in Blaw-Knox Catalog No. 2076.

Here you have the most convenient clamshell bucket catalog ever published — now it is easy to select a bucket for any kind of rehandling, digging or dredging.

Hundreds of buckets to pick from — your job, your equipment, and your conditions can be exactly met — and you will get a bucket which really performs.

Get Catalog No. 2076 — for your library or files — its yours for the asking.

BLAW-KNOX DIVISION of Blaw-Knox Co.
2074 Farmers Bank Bldg. Pittsburgh 22, Pa.
New York • Chicago • Philadelphia • Birmingham • Washington

BLAW-KNOX BUCKETS

pike from Lynnfield and construction of a somewhat shorter length of expressway from the Connecticut line along route 15 toward the Worcester turnpike.

Similarly slow progress in New Hampshire was reported by D. H. Dickinson, chief engineer of that state's highway department. He said the Maine development and Massachusetts plans had forced the New Hampshire Legislature to consider authorizing construction of a toll highway from Sithtown to Portsmouth. If allowed, he said, the toll will be about 20 cents for the entire route.

"We would be negligent morally, if not criminally," he asserted, "if we allowed traffic from these two states to be channeled into our three-lane death trap on U. S. Route 1."

W. B. Getchell Jr., executive director of the Maine Turnpike Authority, told how his state had decided a throughway into its vacationland was needed and had authorized the authority to build ultimately to Fort Kent on the Canadian border and immediately to Portland. Revenue will be obtained from a toll of a little more than a cent a mile, he said.

Gretchell explained the modern, divided highway is being put through parallel to U. S. Route 1, but from one-half to two miles west of it. He said the total cost will approximate $20,000,000.

Connecticut, New England's leader in this highway project with nearly $60,000,000 spent on it over the last 15 years, only has three relatively short strips remaining to be finished. The gaps exist along several miles between Toland and Hartford, a second stretch between Hartford and New Haven and by-passing Meriden, and the expressway around New Haven to the Wilbur Cross parkway.

Leslie G. Sumner, engineering director of the Connecticut Highway Department, said all would be completed by 1949 if $2,000,000 can be raised to tunnel through the ridge at West Rock, southwest of New Haven.

Despite the shortage of funds, Kitfield said Massachusetts' future plans anticipate building a closely parallel road from the Connecticut line along routes 15 and 20 to the Worcester turnpike, with each road becoming one-way lanes of a dual expressway when the new route is finished.

Higher Production of Building Materials is Forecast

The relationship between overall supply and demand for the major building materials is now much more encouraging than a year ago, according to a recent Construction Industry Report, released by the Department of Commerce.

The Index of Production for Selected Construction Materials at the beginning of this year was more than 40 per cent higher than a year ago, the Report states. This gain reflected the great progress made during 1946 toward balancing supply and demand.

At the beginning of this year all of the materials included in the Index except range boilers and unit heaters were at substantially higher levels of production than in the corresponding period of 1946. For some materials—nails, tubs, sinks, warm air furnaces, concrete reinforcing bars—production at the beginning of 1947 was double or triple that of a year ago.

Several building materials—brick, cement, concrete block and asphalt roofing—are approaching a market balance, the report states. However, supply difficulties are being encountered in certain areas because of low inventories.

Distributors' problems are expected to continue in some areas during part of 1947, particularly for insect screen cloth, building boards, plaster, water heaters and water closets.

For some materials the supply-demand situation is not as bright as the overall picture. While high production levels were achieved early in 1947 for such items as millwork, flooring, gypsum board, cast iron soil pipe and plumbing fixtures, output is probably not adequate to meet current requirements and still higher output will be needed to rebuild inventories.

Futhermore, the supply of many building materials may be curtailed during the first half of 1947 by an acute shortage of freight cars, which has reached a point that is causing grave concern. Many building materials firms in various parts of the country need assistance in obtaining freight cars to ship their present inventories.

Estimates for the first quarter of this year indicate postwar high records in the production of most building materials according to the Civilian Production Administration.

Actual production of most of these

HAYWARD BUCKETS

WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD CO.
52-54 Church Street
New York, N. Y.

This 2½ cu. yd. Sauerman Power Scraper cuts deeply into hill of gravel and moves about 85 cu. yd. of material an hour to crusher. The scraper tail-block is attached to a movable A-frame located on the brow of the hill.

☆

Great Flexibility

A Sauerman machine can reach across a stream, pond, pit or stockpile or to top of hill and move material rapidly from any point within its cable radius. The radius can be extended as far as 1,000 ft. or more.

☆

Write for Catalog

Illustrated book describing many typical installations sent on request. Our Engineering Department will gladly advise on your own problem.

☆

SAUERMAN POWER SCRAPERS

There are many jobs where material must be dug and hauled distances beyond the range of the average excavating machine but well within the range of a Sauerman Power Scraper. Big profits are made by using Sauerman machines for these long haul excavating jobs.

Operation and Upkeep are Simple . . .

The operator has finger-tip control of everything. Any workman is easily trained for the job. Power consumption is small. Installation and upkeep costs are surprisingly low.

SAUERMAN BROS., Inc.

574 S. CLINTON STREET
CHICAGO 7, ILLINOIS

materials in January and February showed increases over December, 1946. The January increases were substantial, while production in February, a short month, dipped slightly but was offset by greater gains in March production estimates. Thus, the average monthly output for the majority of materials in the first 1947 quarter was well above the 1946 average, CPA pointed out.

December output of some items was low because of the impact of the coal strike and the holidays, but first quarter production this year also showed increases in most items over October, a high production month.

Comparative production data for a number of building materials in the final quarter last year and the first quarter this year:

Item	4th Quarter 1946	1st Quarter 1947 (Estimated)
Cast Iron Soil Pipe (Thousand short tons)	131	166
Cast Iron Pressure Pipe (Thousand short tons)	209	257
Plumbing Fixtures: (Thousand units)		
Bathtubs	357	418
Lavatories	560	654
Sinks	775	913
Water Closet Bowls	604	594
Heating Equipment:		
Radiation (Million sq. ft.)	21.5	24.2
Warm Air Furnace (Thousand units)	246.8	220.1
Electrical Wiring Devices (Million units)		
Toggle Switches	11.5	14.6
Convenience Receptacles (Outlets)	10.6	14.6
Sockets	33.0	40.5
Outlet, Switch Receptacle Boxes	28.0	36.0
Box Connectors	19.4	33.8
Portland Cement (Million Bbls.)	46.3	40.7
Common and Face Brick (Million units)	1,347	1,136
Unglazed Structural Tile (Thousand tons)	366	327
Clay Sewer Pipe (Thousand tons)	323	338
Gypsum Board and Lath (Million sq. ft.)	941	882
Other Building Boards (Million sq. ft.)	800	792
Asphalt Roofing and Siding (Million squares)	20.1	21.0

Estimate 50% Increase in Connecticut Road Program

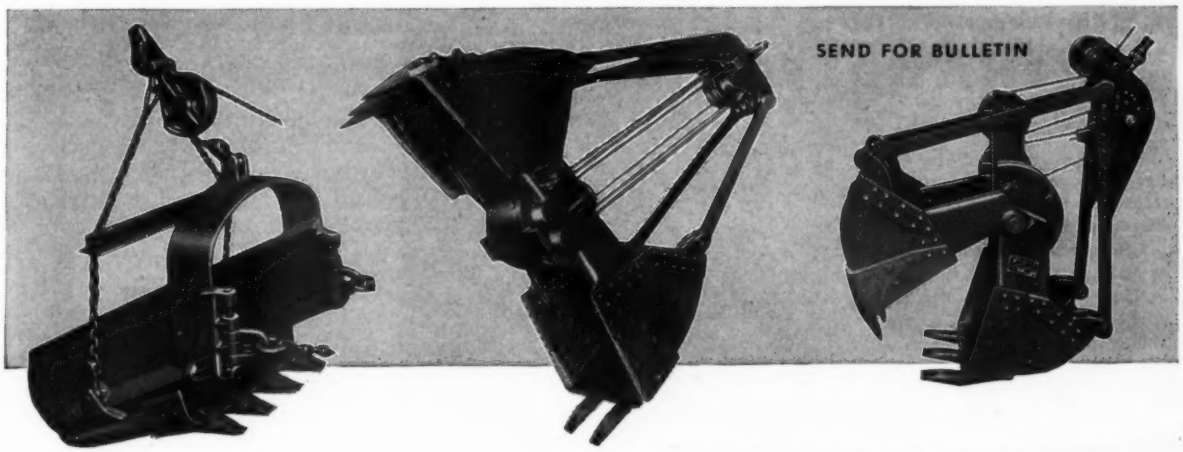
Connecticut's highway modernization program will cost 50 per cent more than estimated in the 1943 report of the State Highway Advisory Commission, mainly because of postwar increases in labor and materials costs, according to announcement by State Highway Commissioner William J. Cox. Necessary project changes will account for a small part of the increased costs, he said.

Cox said the estimated increase would raise the cost of the Advisory Commission's program from $67,000,000 to about $99,000,000. The advisory group's program also called for progressive improvements through a five-year program which would be carried through 1950. The estimated costs of this latter program now are estimated at $200,000,000, Cox said.

Mississippi Awards $10 Million in Road Contracts

A compilation made public by the Mississippi Highway Department revealed that contracts totaling $10,398,043 on 47 projects in 37 counties have thus far been awarded under Mississippi's state postwar highway construction program.

Covering 342.6 miles of highways, the projects include grading, drainage structures, bridges, Portland cement stabilized base course, bituminous surfacing, asphalt and concrete paving.



For Longer Life!

WELLMAN

Williams Type **BUCKETS**

• Count on longer life and more efficient service ... due to Wellman original **welded rolled steel construction.** You get the maximum digging power, and exceptional strength—without excessive weight! Specify Wellman, and you'll specify the best bucket for your purpose.

THE WELLMAN ENGINEERING COMPANY
7002 CENTRAL AVENUE CLEVELAND 4, OHIO

Governors

(Continued from page 273)

a minumum of 50% of initial fee) and return to the motor vehicle registration fund of $3,000,000 taken to pay real estate bond interest in 1933-35. These increases in highway revenues together with the recently adopted refund system on gasoline taxes should improve highway revenues so as to avoid the loss of Federal aid.

OHIO — Incoming Governor Herbert recommended the immediate expansion and further improvement of rural and farm-to-market roads, the improvement of arterial highways to and through cities and villages, and the modernization of obsolete sections of trunkline highways. He stated that he favored the exclusive use for highway purposes of motor vehicle use taxes but that it is not of primary importance that the one cent liquid fuel tax be enacted exclusively for highway purposes so long as funds equal to revenues from that source are appropriated directly from general revenues. He called for full participation in the Federal post-war highway program and the enactment of enabling legislation to permit municipalities to provide off-the-street parking facilities.

OKLAHOMA—Governor Turner asked consideration of a bill reorganizing the State Highway Department. It provides an eight-member Commission, with one member to be named from each congressional district. The members will be charged with building roads on a basis of need rather than "upon a basis of political expediency." He quoted from a letter of the Commissioner of Public Roads that it will not be permissible to advance any Federal funds until diversion is stopped.

OREGON — Governor Snell pointed to the importance of the tourist industry and highway importance of the tourist industry and highway improvement and the desirability of further attention to traffic safety.

PENNSYLVANIA — Governor Duff stated that a plan for fair and equitable distribution of highway funds on the basis of need in every part of the state is nearly completed.

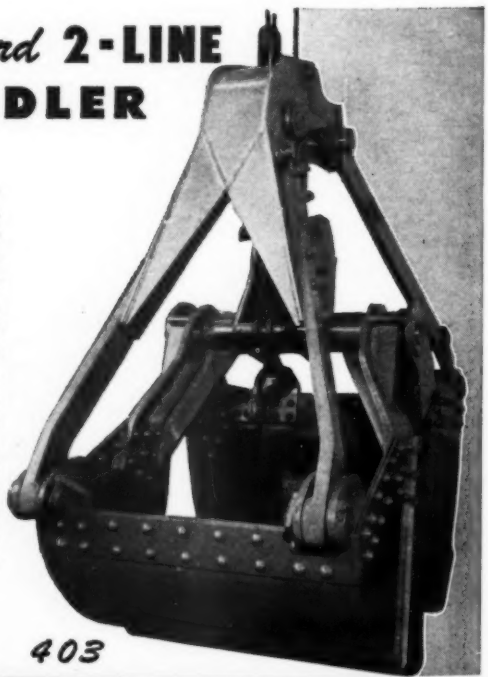
RHODE ISLAND—Governor Pastore called attention to the continued unsolved state fiscal problem, and the need for additional revenues. He mentioned with approval the plans for the construction of the North-South Highway. The Public Works Department is now engaged in studying the state's needs for roads and other facilities with a view to placing such needs in their proper order of priority. He called attention to the desirability of matching Federal highway monies. "Any long-range Public Works Program, however, must await the enactment of an equally long-range fiscal program."

SOUTH CAROLINA—Governor Thurmond pointed that the $18,000,000 road program planned for the coming year will be an increase of 35% over 1946 unless insufficient labor and materials prevent such an increase. He called for a stricter enforcement of traffic laws and amendments in the school bus law to provide greater safety.

SOUTH DAKOTA—Governor Mickelson invited study of the survey of the Greater South Dakota Association on the Federal Aid Highway Program and recommended reenactment for another two years of legislation authorizing a two mill county tax levy for "County Highway and Bridge Reserve Fund."

TENNESSEE—Governor McCord stated that the post-war highway program is progressing rapidly and urged that legislature take no action which would reduce available highway funds or change the present system and method of allocation of funds. While recognizing the dire distress of municipalities, the Governor stated that he was unable to accede to the proposal of the Tennessee Municipal League that one cent of the gasoline tax be appropriated to the municipalities. In recognition of the increased need for highway safety, as well as the additional duties proposed upon the highway patrolmen, the Governor asked for legislation

ERIE *Standard* 2-LINE REHANDLER



THIS compact Lever Arm Rehandler Bucket of normal proportions has ample closing power to fill to capacity in compact materials, and is so designed that the reeving can be adjusted to obtain maximum speed with capacity grabs in loose materials. We have reduced the "height open dimension" thus requiring minimum headroom, enabling you to pile higher and to discharge into higher hoppers. Lighter weight alloy construction provides more pay load (scoop contents) less bucket dead weight. To see this bucket in all detail write for bulletin 403.

● *Write for Booklet 403*

ERIE BUCKETS • *A Complete Line*

Erie Steel Construction Co., 475 Geist Rd., Erie, Pa.

BUCKETS • AGGREMETERS • PORTABLE CONCRETE PLANTS

authorizing the employment of 100 additional highway patrolmen.

TEXAS—Governor Jester recommended 200 more highway patrolmen and 100 more police patrol cars. He said mileage of farm-to-market roads put under contract is greater than the combined mileage of all programs of any other State and asked that the entire surplus from the County and Road District Highway Fund be dedicated to the building and maintenance of farm-to-market roads.

UTAH—Governor Maw recommended a two cent gasoline tax increase for a period of five years to provide additional revenues to meet the state's road needs, which he estimated called for a minimum expenditure of $13,750,000 per year for twenty years. At the same time he called for repeal of "special advantages" to heavy interstate trucks so as to require interstate trucks to pay motor fuel taxes at the full rate. Governor Maw defended in detail the financing of the Department of Publicity and Industrial Development from the Motor Vehicle License Plate Fund and severely criticized groups objecting to this as a diversion of road funds. He emphasized the importance of promotion of large scale tourist trade.

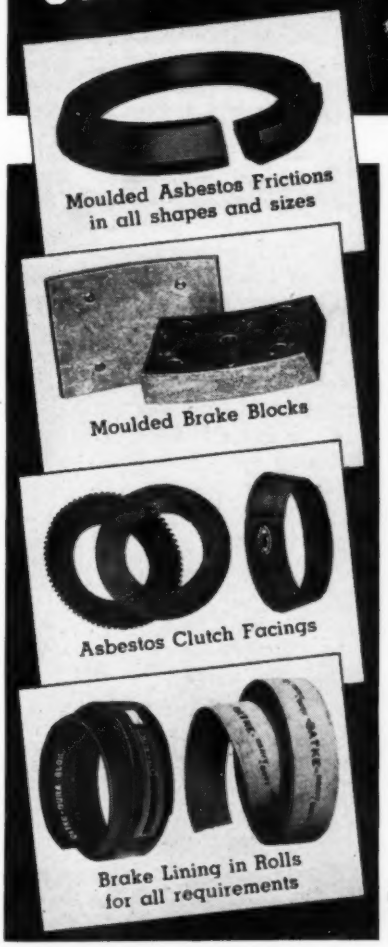
VERMONT—Governor Gibson recommended a small increase in registration fees on pleasure cars and upward revision of truck registration fees, increase in the maximum load limit on trucks to 50,000 pounds and elimination of 10% tolerance for all trucks He stated that these revenue increases would raise $900,000 of the total $2,900,000 required to match all available Federal highway funds, leaving to the legislature the methods for raising additional funds.

WASHINGTON — Governor Wallgren stated that expansion and improvement of the road system on the basis of sound planning and engineering are essential and proposed the immediate construction of a low level vehicular tunnel through the Cascade Mountains and completion of a four-lane primary highway from Olympia south to Vancouver. He recommended increased salaries for highway patrolmen.

WEST VIRGINIA—Governor Meadows stated that the greatest highway need is for secondary and farm-to-market roads. He said that the time has come to embark upon a road building and maintenance program of considerable magnitude, having in mind receiving the greatest possible value for the road dollar.

WISCONSIN—Governor Rennebohm recommended that the legislature study methods of reducing traffic accidents and stated that such legislation need involve no additional burdens upon the taxpayer.

WYOMING — Governor Hunt said the three year post-war highway plan calls for expenditure of approximately $27,000,000 and the building, in round numbers, of 1,000 miles of primary system roads, 500 miles of secondary roads, and 10 miles of city streets.



GATKE
Custom-Bilt
Brake Materials

Contractors and Suppliers everywhere report increased output and wonderful economies effected by GATKE Swing Frictions, Brake Lining and Clutch Facings.

The smooth, uniform action under all service conditions gives operators confidence — avoids strain and fatigue—helps keep things moving faster without delays.

The long wear life avoids interruptions for adjustments and replacements.

Whatever the service, GATKE has what it takes to get the job done. For recommendations just send application information.

GATKE
CORPORATION
232 N. LaSalle St., Chicago 1

• Caterpillar D8 tractors with bulldozers and tractor crane work with the 5-yd. Bucyrus-Erie dragline on Atkinson's river channel clearance project below Boulder Dam.

Dragline Floats

(Continued from page 271)

dragline. A cable car, drawn 450 feet up the canyon wall on approximately a 60 percent grade by an inclined hoist assembly, handled all wasted material.

The tramway consisted of a standard gauge railway built on a 60 percent incline, using two 220-cu. yd cars mounted on standard railroad trucks. Material was hauled from the top of the incline in four 20-yd. Sterling trucks for disposal in a draw ¼ mile distant.

The dragline operated on both sides of the river from a berm of fill material which it removed as it proceeded, widening the river to the canyon walls. Excavated material was loaded either to four 20-yd. Sterling trucks or to a Sauerman slack line strip with 7½ yd. bucket for transporting it to the cable car tramway. The trucks used the berm for a roadway between the dragline and the hoist cars. For part of the excavation work, the Bucyrus-Erie excavator was converted to shovel front end.

Single Dragline

(Continued from page 267)

pattern and charge to suit, using 1½-in. pellet powder.

Drainage has not been a severe problem at number 28, but where advisable in order to keep surface water from running into the pit, a Northwest dragline with 2-yd. bucket and 80-ft. boom excavates surface drainage ditches every 500 feet. What water does get to the pit is pumped over the highwall by eight Gardner-Denver pumps (two 4-in. double discharge and six 3-in.) through U. S. Rubber discharge hose.

Mounted on Rafts

The pumps are mounted on rafts made from old water tanks taken from no-longer-used steam shovels. This provides protection in event of floods and allows floating pumps on water of any depth. The pumps seldom run more than eight hours a day. No. 28 uses about 600 feet of 4-in. hose and 1400 feet of 3-in. hose with its eight pumps.

The topography of the mine area is largely waste land with some scrub timber, almost useless for any agricultural purpose. Mine officials have found that the big dragline can economically clear the land as it strips and no other means is used for this purpose except for occasional clearing by hand ahead of the 2-yd.

dragline in drainage work. There is enough coal remaining in no. 28 mine to provide 15 to 20 more years of operation, according to a recent estimate.

Safety is a must at all Maumee mines and the visitor's first impression is the unusually clean and orderly condition of all the mine properties. At number 28, a committee of three men is elected by the 64 employees and every man on the job is urged to report any apparent hazard to the committee or to the superintendent. Safety devices provide thorough protection to men working on the few potentially dangerous jobs.

A rule carefully followed is never to grease or oil any moving machinery. All machines are shut down an average of five minutes every shift for lubrication. Employees use either rubber gloves or wooden hooks when moving power cables. Truck drivers are instructed to operate their trucks in the pit in such a way that they are at all times as far as possible from the highwall to reduce the possibility of injury from falling rock. Safety stop buttons are placed conveniently throughout the preparation plant and employees trained in their use.

Repair Shops Nearby

Hauling units and bulldozers are serviced at the mine and repairs of other equipment are handled from the company's central repair shops employing 60 men and located just east of No. 28. Here, dipper teeth for the big dragline's 25-yd. bucket are built up with hard surfacing rod after every four to eight shifts, depending on the type of material being stripped. An ample stock of repair parts for all machinery is kept on hand and the shops are equipped to handle major repairs. A careful cost record is kept of all repair work.

In addition to superintendent Wolf, pit foreman Henry Wonders, tipple foreman Judg Garwood, drill foreman Warner Barrett, office manager Ad Cotter, and 25-yd. dragline operators Ralph Clark, Jento Gibson, Claude Truitt and Claude Eager, 60 men are employed at mine 28:

25-yd. Dragline Ground Men	4
25-yd. Dragline Oilers	3
Loading Shovel Operator	1
Loading Shovel Pit Men	2
Drillers	7
Shooters	7
Drill Helper	1
Teamster (for moving power cables)	1
Truck drivers	8
Pumpers	3
Bulldozer Operators*	1
Garage Mechanic	1
Garage Helper	1
Electrician	1
Electrician Helper	1
Preparation Plant	14
Extras	4
TOTAL	60

*The other two bulldozers are operated part time by oilers, ground men, pit men and pumpers.

O. Stanley Roberts is president of Maumee Collieries Company with offices in Toledo, Ohio. The main operating office of the company is at Terre Haute, Ind., where the following members of the staff make their headquarters: Hugh B. Lee, vice president and general manager; David W. Aten, vice president and secretary; B. C. Dudley, vice president in charge of sales; George W. Rea, general superintendent; Lafe Stewart, mining engineer; Floyd Jackson, field engineer; W. E. Spainhower, mechanical engineer; Robert Akre, explosives engineer; Joe Burcham, superintendent of maintenance and motorized equipment; J. E. Winters, superintendent of maintenance, dragline and shovel; D. L. Brown, superintendent of maintenance, preparation plant equipment; and Evans Bennington, chief electrician.

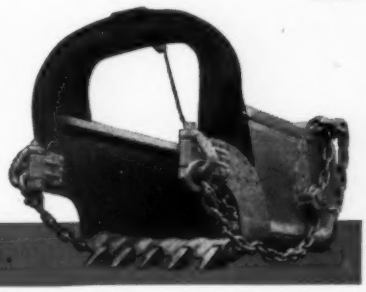
• John Fesler's Caterpillar D8 tractor with bulldozer building road to new oil well site in "Cat Canyon Field" near Santa Maria, Cal.

SPEED UP YOUR DIGGING WITH A

Red Arch

Red Arch buckets can speed your dragline digging because they fill easier and faster, because they're correctly balanced to carry a full heap on a fast swing, and because the dump is swift and clean, permitting a fast return. That means more dirt per pass, and more passes per hour. They have plenty of strength, too, with extra strong lips, reinforced bottoms, and the famous high red arch that permits free flow of dirt and keeps the bucket rigid through an astonishing amount of digging — yet the absence of excess weight keeps them light. Let us fill your dragline bucket requirements with a Red Arch!

4R46C



BUCYRUS ERIE

SOUTH MILWAUKEE, WIS.

ANNOUNCING

P&H's New 6-yd Electric Shovel

Now Available with "Magnetorque" Hoist Drive

Magnetorque Drive simplifies the entire hoisting machinery including the power units . . . a simple AC induction motor does the driving.

Here are some of its outstanding advantages:

1. It eliminates the customary hoist generator and its maintenance.
2. It provides smooth Ward Leonard performance with faster plugging.
3. It reduces peak power demands . . . lowers power costs.
4. It eliminates the customary slip-friction hoist clutch . . . there is far less wear.
5. It cushions shock loads . . . reduces overall maintenance.

Other Added Values in P&H's 6-yd Electric Shovel include:

DIRECTRON CONTROL — eliminates all make-and-break contacts in control system.

INDEPENDENT PROPEL DRIVE — eliminates all mechanical clutching — provides faster move up.

WORM DRIVEN CROWD — smoother, faster, more responsive.

FILTERED AIR CAB—provides only clean air for cooling motors and generators.

ELECTRICAL EQUIPMENT—all designed specifically for shovel service — not adapted for it.

ALL WELDED CONSTRUCTION — provides greater strength for maximum shock resistance and permanent alignment of machinery.

• • •

P&H's Added Values are all directed toward the same basic objective... to insure steadier, more dependable digging in the open pit at a lower cost per ton. Details on this P&H Model 1600 Electric Shovel are yours for the asking.

P&H **ELECTRIC SHOVELS**
4517 W. National Ave.
Milwaukee 14, Wis.
HARNISCHFEGER CORPORATION
ELECTRIC CRANES · ARC WELDERS · HOISTS · WELDING ELECTRODES · MOTORS

LEADING THE WAY IN ELECTRIC SHOVEL DEVELOPMENTS

NOT in the Contract

A fellow with the d.t.'s informed his doctor that a cat was prowling around in his stomach and demanded that it be removed at once.

Thinking a fake operation might clear up the patient's delusion, the doc went into his act, complete with white gown, pretty nurse and gleaming instruments. Then he applied the ether and sent for a cat.

And so it came to pass that the patient awoke and blinked at a big, black cat sitting on his chest. At length he let out a sad sigh. "No, Doc, you'll have to try again. The cat that's creating all the commotion in my stomach is a GRAY cat."

Pretty Nurse: "Doctor, every time I lean over this cat skinner to listen to his heart, his heart beats increase. What should I do?"

Doctor: "My dear, I recommend that you button up your blouse."

Why do you want your little boy to sleep in that high bed?

So we can hear him when he falls out.

A young doctor and a young dentist shared the services of a receptionist and both fell in love with her.

The dentist was called away on business so he sent for the receptionist and said: "I am going to be away for ten days. You will find a little present in your room."

She went in and found ten apples.

Fellows who drive with one hand are usually headed for a church aisle. Some will walk down it and others will be carried in a box. Either way, it's better to use both hands.

The guest of the house was watching with amazement the contractor's small boy who was amusing himself by driving nails into the furniture. He said to the host: "Joe, isn't that an expensive hobby your son has?"

"Oh, it's not so bad," answered the contractor. "I get the nails wholesale."

"Goodness, George, this isn't our baby. It's the wrong carriage."

"Sssh! It's a better carriage."

The tired cat skinner plodded wearily home. He'd had a hard day on the job. His last good tire had blown out. When he reached home there was no aroma of supper cooking. A note informed him that his wife had left for good with a sailor. "That's the last straw," he said to himself dismally. "One shot would end it all." So he got down the bottle and took one.

An engineer walked into a fur emporium with a gorgeous blonde on his arm and demanded something expensive to hang on the curvaceous creature.

They yanked out something for about $500 and he rejected it with a snarl. "What alley cat did that come from? Bring me something nice."

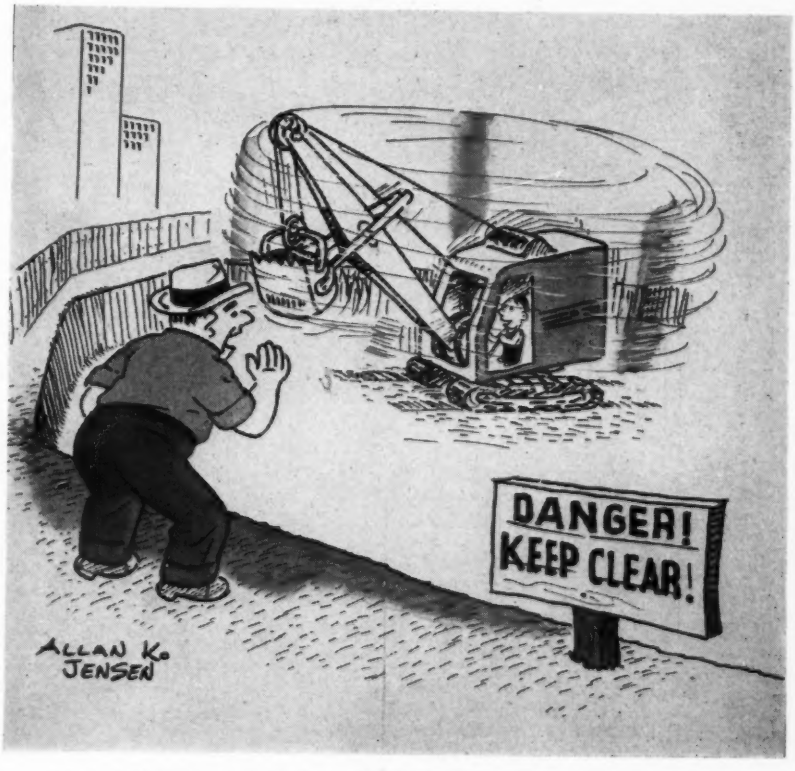
Next came a $5000 number, then a $10,000, but with each offering his demands grew louder for something better, much better.

So finally they dug up the key to the vault and brought forth a coat worth about $2 less than a king's ransom.

"Now that's fine," said the engineer, as his companion stared goggle-eyed at the creation. "Here's my check. You investigate at my bank to make sure it is good and I will be back Monday for the coat."

But Monday when he returned, he found the store manager in a purple passion. "You fraud! You cheat! The bank never heard of you! If you want that coat you'll have to pay for it in cold cash."

"Oh, but I didn't come after the coat," said our hero. "I came to thank you for a wonderful weekend."



"Junior! If you come outta there, daddy will get you a REAL merry-go-round!"

Notes from the manufacturers

Indiana Equipment Co., Inc., Indianapolis, Ind., will shortly move into newer and more spacious quarters located on West 16th Street and Indiana Ave. on Road 52. Their new building will incorporate the latest in architectural and structural ideas and will have approximately 25,000 sq. ft. of floor space. The company's eight acres of ground will include a proving ground and allow ample storage space. The company distributes equipment for Bucyrus-Erie Co., J. D. Adams Mfg. Co., Barber-Greene Co., Buffalo-Springfield Roller Co., Chain Belt Co., Heil Co., Joy Mfg. Co., International Harvester, Isaacson Iron Works, Littleford Bros., Inc., Mall Tool Co., Sauerman Bros., Inc., and J. A. Boebling's Sons Co.

Pioneer Engineering Works, Inc., Minneapolis, Minnesota, announces the appointment of two new distributors. Central Machinery Co., Great Falls, will serve the northwestern part of the state, and Wortham Machinery Co., Billings, will handle the southwestern area. Both companies will carry the complete line of Pioneer equipment in their newly-assigned territories which were formerly served by Connelly Machinery Co., Billings.

Independent Pneumatic Tool Co., Chicago, announces the opening of technical office at Sao Paulo, Brazil, under the managership of R. P. Rudy who has been the company's representative in Brazil for the past two years.

Barber-Greene Co., Aurora, Ill., announces the appointment of two new distributors. The Townsco Equip Co., Oklahoma City, Okla., will be exclusive distributor for the state of Oklahoma, and State Equipment Co., Harrisburg, Pa., will represent Barber-Greene in the following Pennsylvainia counties: Union, Montour, Northumberland, Snyder, Juniata, Dauphin, Perry, Cumberland, Lebanon, Franklin, Adams and York.

Both distributorships will provide complete facilities for sales, service, and repairs of all the company's products.

Associated Equipment Distributors, Washington, D. C., continued George W. Swart as Director of Region 7 at a recent inaugural luncheon held in Chicago. Mr. Swart is president of Contractors Machinery Co., Grand Rapids, Mich.

Gardner-Denver Co., Quincy, Ill., has elected Edgar F. Schaefer company president. Former President H. G. Myers became chairman of the executive board.

American Steel Dredge Co., Inc., Fort Wayne, Ind., has been acquired by Walter W. Walb and a group of company executives through the purchase of controlling shares of stock. Mr. Walb will continue as president of the company and assume chairmanship of the board of directors. Oscar G. Scheiman is vice president and sales manager of dredges, hulls, and fabrications.

J. D. Adams Manufacturing Co., Indianapolis, Ind., announces that C. J. Haring has been appointed General Sales Manager. He succeeds V. E. Trimble who passed away in March.

MEMO
TO ALL CONSTRUCTION SUPTS.:—
Are all buckets just "buckets"?
Shouldn't we find out if HAISS Hi-Power Reeving does mean bigger payloads?
M.J.R.
HAISS
HI-POWER
For Catalogs, Prices, Deliveries
Write or Wire
GEORGE HAISS MFG. CO., INC., 144th Street & Park Ave., New York 51, N. Y.

Heavy-duty trailers from 5 to 100 tons

Safe for the biggest loads

Hauling contractors everywhere depend on Jahn Heavy-Duty Trailers for safe, fast and economical moving of their heaviest loads like this 110,000-lb. transformer. Deep, wide flange main beams run the full length of the trailer. Cross-members and outriggers are I-Beam sections. Improved, fabricated gooseneck adds greater built-in strength. Positive, self-equalized braking at each wheel regardless of position of axle assures maximum safety. See your nearest Jahn dealer for details.

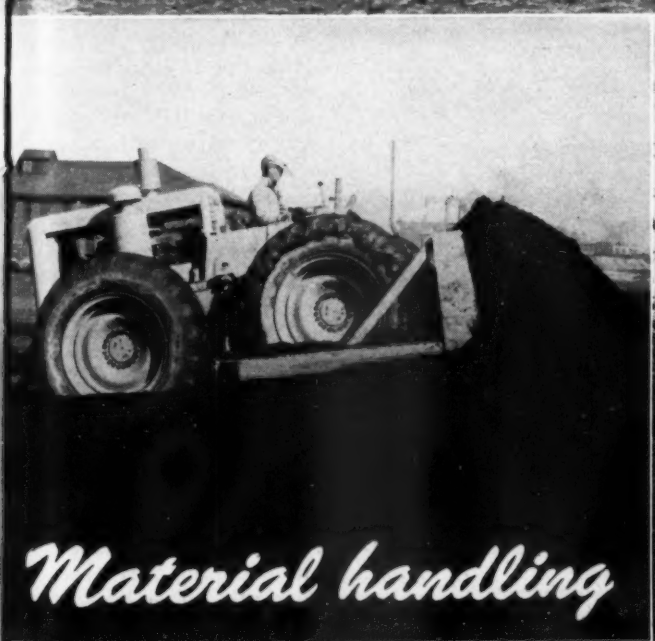
JAHN TRAILERS ALL OVER THE WORLD

Reg. Trade-Mark

C. R. JAHN COMPANY

1349 WEST 37th PLACE CHICAGO 9, ILL.

TOURNADOZER



LETOURNEAU
PEORIA, ILLINOIS

HIGH-SPEED RUBBER-TIRED

TOURNADOZERS

Safe Use

(Continued from page 269)

or stationary object, perhaps a truck with brakes set, trunk of a large tree, etc. If the boom is attached to a truck, the truck can pull the boom forward with the operator at the controls. Another remedy would be to place some obstruction behind the rear crawler and slowly back the machine up on this obstruction. This will throw the boom center of gravity forward. *Never try to start a boom lowering by "jerking" or "jiggling."*

10. *High tension wires.* When a boom or cable touches a high tension wire, creating a short, the operator should either stay in his position on the machine and bring the boom back, or jump clear of the machine. He should never dismount from the machine by climbing down the side, permitting his body to come in contact with the machine and the ground at the same time. He should also warn all ground crews not to touch units in contact with the wire.

11. *High working long booms.* Cranes with long booms should never travel over rough sections with the boom above 60° especially when a pendant is used. The swing of the pendant and the rebound of the mounting can easily be sufficient to throw the boom over backwards. This is especially true of rubber-mounted units.

Rubber-Mounted Units

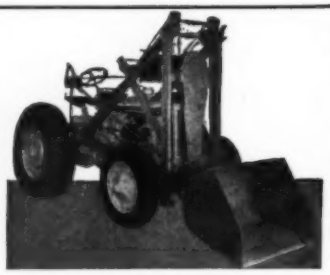
12. *Lifting heavy loads on rubber-mounted equipment without outriggers.* Most rubber-mounted cranes can lift the full capacity of the crane over the ends parallel to the wheel base without outriggers. Lifting to the capacity of the crane without outriggers results in heavy deflections on the tires. If the load is dropped, the reaction of the heavy inflated tires will give a dangerous rebound, tending to throw the boom over backwards. Lifting such loads on outriggers would eliminate this rebound.

• Never approach a quarry without checking the cycle of operation and shooting periods with someone in authority.

13. *Crane swinging on flatcar.* No crane or shovel should complete a full swing while temporarily mounted on a flatcar for shipment or other reason unless the flatcar has been blocked beyond the outside of the rails, then rotation should be at reduced speed.

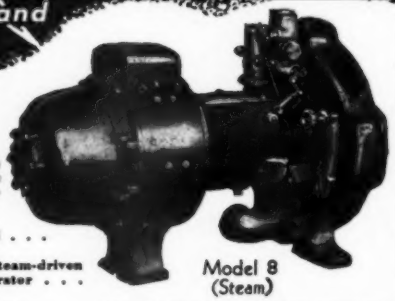
14. *Tension of cable slings at various angles.* Although it is generally known that the load in slings is usually higher than the actual load due to the angle of the sling members, operators should be provided with charts to give them this information for various sling angles. For instance, an angle at 45° with 1000 pounds gives a cable loading of 705 pounds. An angle of 30° with 1000 pounds gives a cable loading of 1000 pounds. An angle of 5° with 1000 pounds gives a cable loading of 5735 pounds.

15. *Kinetic loading.* Operators should remember that falling loads can exert forces many times their weight. As an example, 1000 pounds dropped one foot and stopped abruptly by a short piece of plow steel wire rope will give a static cable load of approximately 54,000 pounds. 1000 pounds dropping two feet will give a static cable load of 76,000 pounds. 1000 pounds dropping three feet will give a static cable load of 93,000 pounds. Most 1⅛" diameter plow steel cable—6 x 19—will reach its elastic limit resisting a 1000 pound free drop load



Front - End
LOADERS
For Industrial Tractors
Extensible Booms,
⅝-cu. Yd., Bucket 8-foot lift,
Backfiller Blades
White Mfg. Co.
ELKHART INDIANA

HERE'S your ideal small power plant for lights, ventilating fans, or other electrical equipment.
MOON Generators
TURBO and BELT DRIVEN
for LIGHT and POWER



Model 8
(Steam)

Important MOON features include:
1. GOVERNOR AND COMPOUND WINDING on Steam-driven models prevent excess voltage output which might injure electrical apparatus . . .
2. ONLY 2 EASY-TO-REACH OILING POINTS . . .
3. AUTOMATIC CUT-OFF on larger capacity Steam-driven models prevents overload damage to generator . . .
Send now for illustrated circulars
Models from 1 to 7½ KW capacity.
Moon MANUFACTURING CO.
ESTABLISHED 1893
118 North Jefferson St., Chicago 6, Illinois, U. S. A.
Send in your old Moon generators for rebuilding now—we can give prompt service.

of three feet. This is especially critical with short ropes.

16. *Approaching a quarry.* Never approach a quarry without contacting someone in authority who is thoroughly familiar with the cycle of operation and shooting periods. Approaching a quarry from a vacated side may bring the individual into the quarry at a time when a blast is about to be discharged. To prevent injury of workers unfamiliar with blasting periods, operators should be instructed to close approaching roadways, use effective warnings.

17. *Flashlight vs. finger feels.* In maintenance work around heavy equipment it is necessary, in many instances, to insert certain sections in a manner where the fitting point cannot be easily seen because of darkness. The common practice is to precede such pieces by the insertion of the hand or fingers to feel how close they are to alignment. This too often results in the loss of fingers—in some cases, arms. A flashlight should always be within reach of the workman. When absolutely necessary to insert fingers in machinery, the machinery should first be so blocked that it cannot move.

18. *Safe repairs.* In repair of equipment damaged or worn, care should be used to see that factors of safety incorporated in the original design are not lost by careless or thoughtless repair procedures. If repairing and reinforcing procedures are not given special attention, the factors of safety may easily be reduced rather than increased. For example, straightening of heat treated members by heating may destroy the benefits of heat treating and greatly lower the elastic limit and the ultimate strength. Reinforcement of broken parts by crude, overweight patches may bring about unexpected concentrated loading to cause early failure.

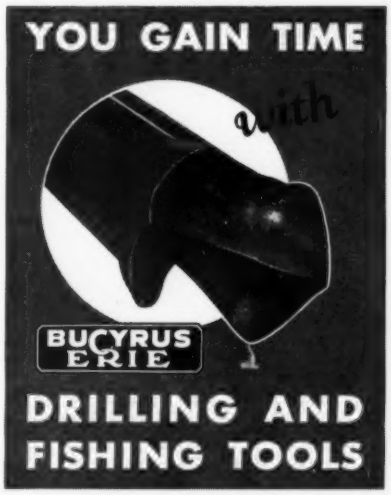
19. *Periodic inspection.* Scheduled periodic inspection of suspension cables, ratchet pawls, slings, chains, brakes, and control linkages is a vital safety procedure on any job.

You will find that time spent in developing a truly safety-minded organization fully acquainted with safe conduct practices pays dividends not only in more efficient and profitable work, but in improved employee morale.

J. J. Wilson

J. J. Wilson, Seattle branch manager for John A. Roebling's Sons Company, passed away March 6, 1947. Born in Lawrence, Kansas, 59 years ago, he moved to Seattle in 1905, was widely known in the mining and logging industries as a wire rope engineer. It was in this capacity that he began his association with Roebling in February, 1920.

Mr. Wilson was a member of Thomas M. Reed Lodge No 225, F. & A. M., and was a 32nd degree Scottish Rite Mason; a member of Nile Temple of the Shrine, Port Angeles Naval Lodge B. P. O. E. No. 353, the Washington Athletic Club, Rotary International, the Seattle Chamber of Commerce, and Associated General Contractors of America.

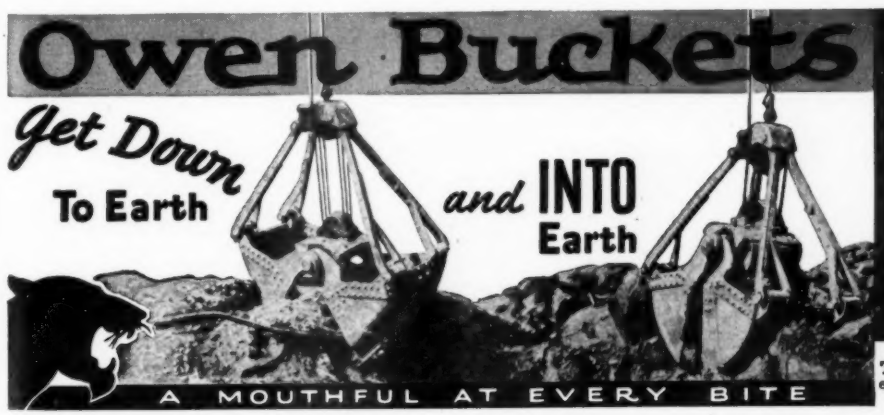


. . . because their select steels, expert workmanship, and field-proved designs add up to savings in time and money.

3A46

BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE, WISCONSIN



Owen Buckets can be dropped with entire weight on teeth points or cutting edges. Hard surface penetration is assured with an unusual amount of material between jaws before closing power is applied.

Closing power is efficiently transformed into digging power and proper shell curvatures permit easy sliding entrance and spilling of material.

THE OWEN BUCKET COMPANY

6095 BREAKWATER AVE. • CLEVELAND, OHIO

BRANCHES: New York, Philadelphia, Chicago, Berkeley, Calif.

7 Reasons WHY DUMPTOR Maintenance Cost Stays Low in Toughest Service

The hauling unit built by a shovel manufacturer for work with shovels.

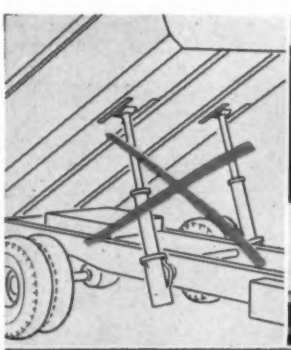
LESS TIME OFF . . . MORE TIME TO HAUL because:

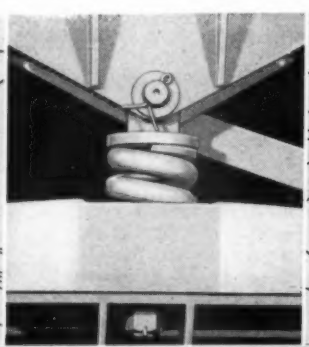
1 No Body Hoist Maintenance. Dumptor has no body hoist. Gravity alone tips 6-yard body in one second in zero weather.

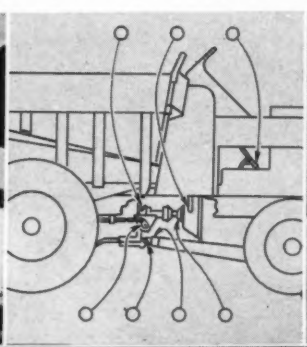
2 One Spring Only, on pivot-mounted front axle. No other springs on either axle. No spring maintenance problem.

3 Lubrication Chart shows just 7 daily lubrication points on Dumptor chassis. Daily lubrication wastes no haul-time.

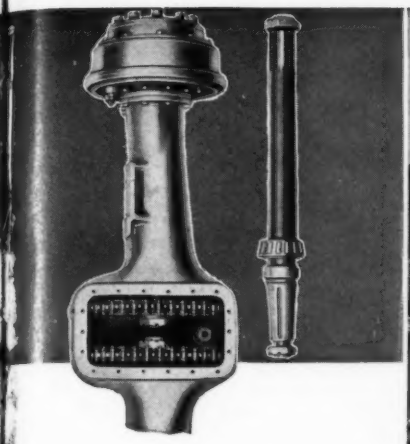
4 Big 16:00 x 24" single drive wheel tires. Special heavy duty for off-road work. No rock wedging between duals.





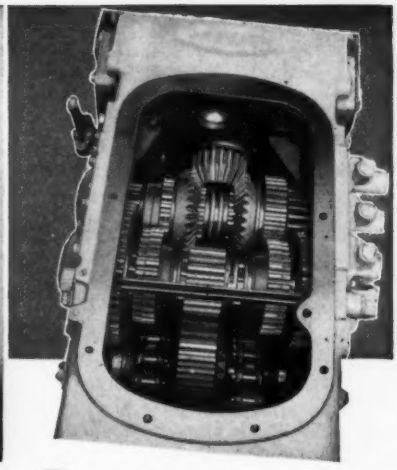


KOEHRING CO. MILWAUKEE 10, WISCONSIN



5 No Dumptor drive axle has ever been broken in rock. They're chrome nickel steel, 4" in diameter, in heavy cast steel case.

6 Kickout pan adds 3/16" steel on top of 3-layer steel-oak-steel bottom. Body sides heavily reinforced with 4" steel channels.



7 Transmission runs in oil . . . lasts longer. Oil changed only once a season. No need for continuous refilling. Case is oil-tight.

New 3½-S End Discharge Mixer Saves Labor

New Kwik-Mix Dandie

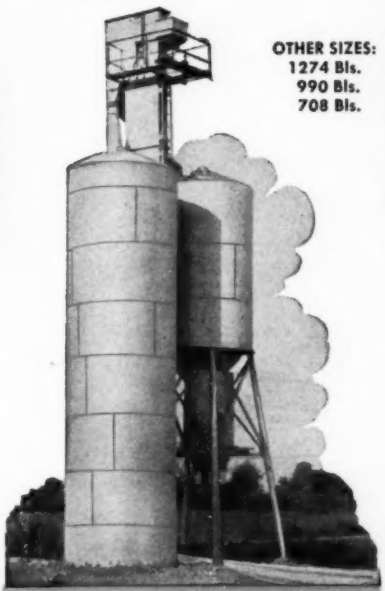
Dandie quality in every detail. Modern high strength welded construction. Thorough mixing action. End discharge saves labor . . . you don't back and turn loaded barrow. Approach mixer from either side or front. Spotting area unobstructed. Trails fast, safely, because it rides on leaf springs.

KWIK-MIX COMPANY
PORT WASHINGTON, WISCONSIN

Stores up to 1,550 Barrels Cement Yet Fully Portable

Johnson Twin Silo Bulk Cement Plant

Combines large storage capacity — up to 1,550 barrels of cement for the largest size — with complete portability. All-welded construction simplifies erection.



OTHER SIZES:
1274 Bls.
990 Bls.
708 Bls.

C. S. JOHNSON COMPANY
CHAMPAIGN, ILLINOIS

Sliding Boom Eliminates Costly Handwork

Parsons 250 Trenchliner

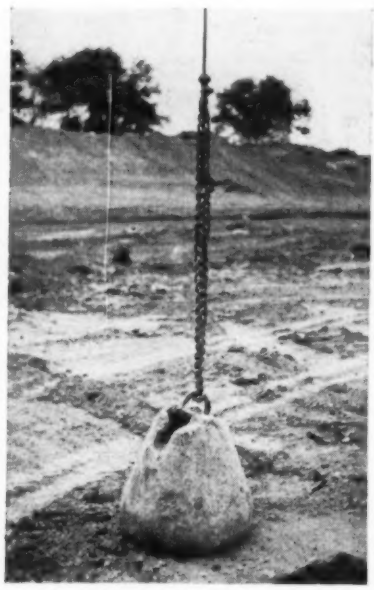
Sliding boom permits Parsons 250 Trenchliner to sidestep obstructions—walls, trees, telephone poles — that would stop other trenchers. Costly handwork is eliminated. Boom slides easily from side to side across full width of Trenchliner, because it rides on large diameter rollers.

PARSONS COMPANY
NEWTON, IOWA

Field NOTES

Hoist Rope Chain

Operators who use "skull-crackers" or "nigger-heads" to break paving, rock, scrap, slag or other material know the common trouble with the hoist rope is not so much the shock and torque attendant to lifting and dropping the hammer as is the tendency of the wire rope to twist and kink when suddenly released of all tension by the hammer hitting the material. Invariably, the momentum of the hoist line makes it con-



tinue its travel six or eight feet after the impact of the skull-cracker and this slack in the wire rope permits it to twist or even kink.

Preformed Rope a Solution

Much of this rope difficulty can be overcome by the use of preformed wire rope because the preforming process frees the component wires from locked-up torsional stresses, thereby greatly reducing the tendency of non-preformed wire rope to twist, rotate or kink. But here is an operator who eliminated wire rope twist completely by using ordinary welded chain as the rope terminal. The chain takes the sudden slack without twisting and so holds the line steady, free of all tendency to twist or kink.

Destroying Detonators

Blasting caps, electric blasting caps, and delay electric blasting caps that have so deteriorated from age or improper storage that they are unfit for use should be destroyed. These devices should also be destroyed if they have ever been under water, as, for example during a flood, regardless of whether or not they have been subsequently dried out. In some cases, the shells of caps that have been wet and then dried will show signs of corrosion.

Such caps may be dangerous to handle, and it is recommended that they not be disturbed until a representative of the manufacturer has had an opportunity to pass on them. The method most generally used for destroying detonators is to explode them under some confinement as described below. *Detonators should not be thrown into small bodies of water* such as rivers, creeks, ponds, or wells.

Remove Cover

If possible, it is advisable to explode ordinary (fuse) blasting caps in the original container with the cover removed. Otherwise, they should be prepared for blasting as follows: They should be placed in a small box or bag; a hole should be dug in the ground, preferably in dry sand, at least 1 foot deep; the container should be placed in the bottom of the hole and primed with one cartridge of dynamite and a good electric blasting cap or ordinary cap and fuse; and the caps and the primed cartridge should be carefully covered with paper and then with dry sand or fine dirt and fired from a safe distance.

Destroyal Procedure

It is recommended not more than 100 caps be destroyed at one time and that the ground around the shots be thoroughly examined after the shot to make certain that no unexploded caps remain. The same hole should not be used for successive shots.

To destroy electric blasting caps or delay electric blasting caps, it is necessary first to cut the wires off about one inch from the top of the cap, preferably with a pair of tin snips. No attempt should be made to cut the wires from more than one cap at a time.

Use Box or Bag

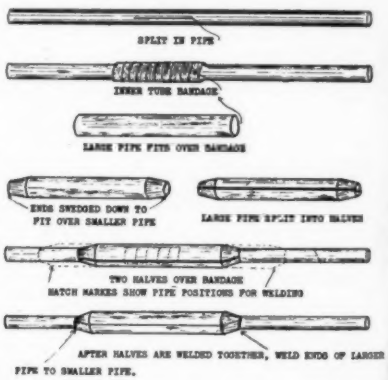
Not more than 100 blasting caps should be placed in a box or paper bag, primed with a cartridge of dynamite and a good electric blasting cap, buried under paper and sand or dirt, and exploded as described above. The same precautions recommended in a preceding paragraph for disposal of regular blasting caps should be observed.

Blasting caps should never be destroyed by placing them in a hole which is to be shot, especially by dropping them into well drill holes. Many bad accidents have occurred on jobs where this procedure was used.

Reprinted from Bureau of Mines Information Circular 7335

Permanent Pipe Repair

When gas, steam, and water pipes develop a split in the seam or are broken otherwise, it is possible to repair them without interrupting service if the following method is practical for the occasion.


SPLIT IN PIPE
INNER TUBE BANDAGE
LARGE PIPE FITS OVER BANDAGE
ENDS SWEDGED DOWN TO FIT OVER SMALLER PIPE
LARGE PIPE SPLIT INTO HALVES
TWO HALVES OVER BANDAGE
MATCH MARKS SHOW PIPE POSITIONS FOR WELDING
AFTER HALVES ARE WELDED TOGETHER, WELD ENDS OF LARGER PIPE TO SMALLER PIPE.

• Permanent bandage for leaking pipe can be affixed without cutting off service.

First, wrap the split portion with strips of an inner tube, drawing the tubing tightly at each turn, and then wire each end of the "bandage" to prevent seepage of the gas, steam, etc. Now obtain a length of larger pipe

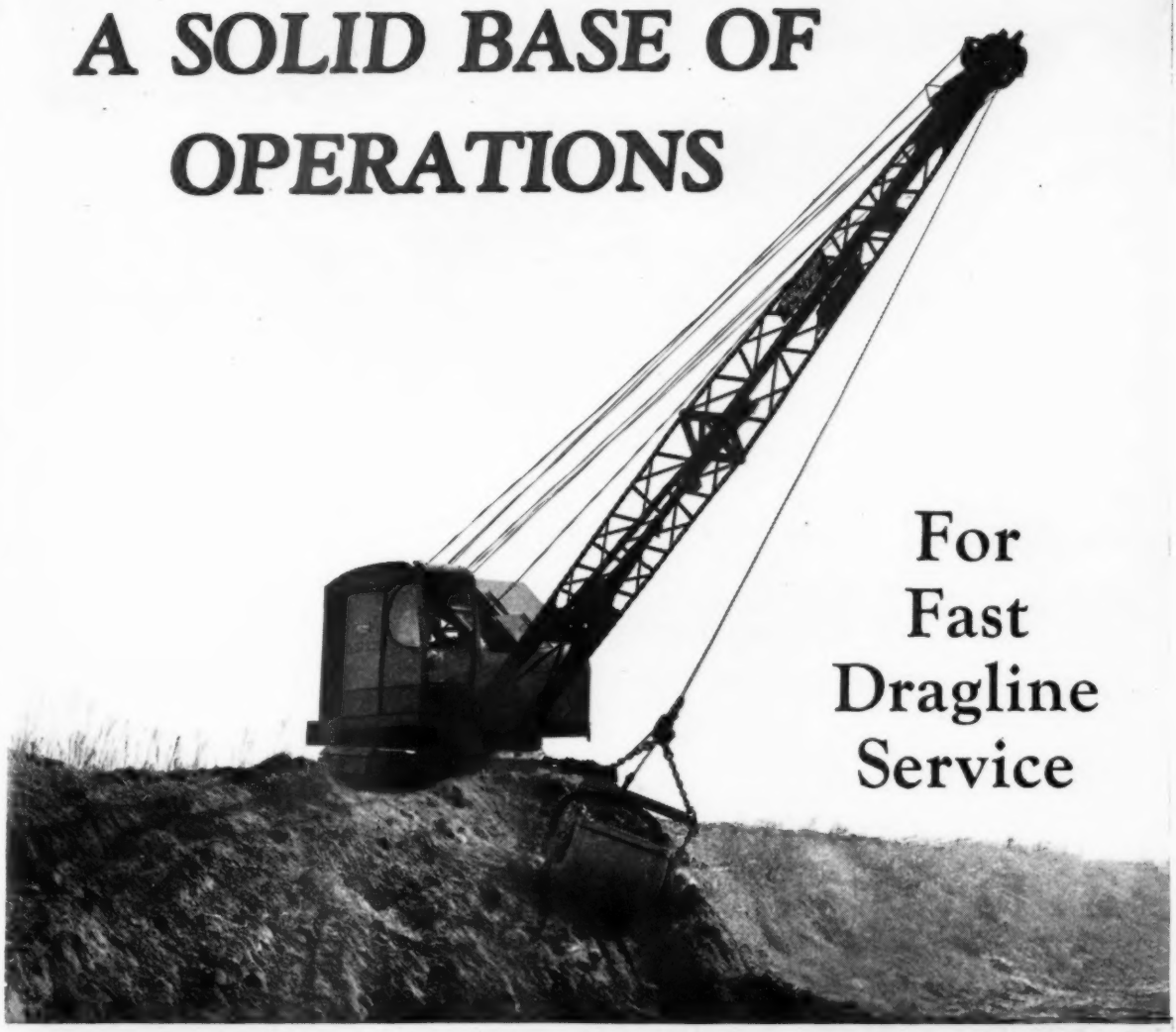
(Continued on page 304)

gstnyset sxrrtedis eayllet s rnstie

n ètdive

r

A SOLID BASE OF OPERATIONS



For Fast Dragline Service

Compact design, with weight properly distributed for a low center of gravity, gives the Bucyrus-Erie ⅜- to 2½-cu. yd. excavators their unusual stability . . . and provides the safe, sure working foundation you need for efficient, high-speed dragline operation. Long, widespread mountings and treads with large bearing areas are other factors giving the Bucyrus-Eries a sure-footedness ordinarily expected only from heavier machines. And there are other features, too, which combine to deliver high output with Bucyrus-Erie draglines—the positive, full-feel control and slow speed, smoothly responding clutches and brakes which give the operator secure command of the load throughout the cycle; the all-welded, latticed box section boom that resists swing and compression stresses, and the strong, balanced Red Arch buckets that fill easily, carry smoothly, dump cleanly. For long hours of sustained production that result in bigger profits, you can't beat a Bucyrus-Erie. Let your distributor show you more reasons why they are such outstanding performers.

03E47C

BUCYRUS ERIE

BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE, WISCONSIN

(Continued from page 274)

unit of 100-ton capacity is equipped with five, 36-ply Goodyear earthmover tires—three on the rear of the vehicle and two on the front which distributes the load equally on all tires and permits them to track in staggered formation.

Percussion Bits

Manufacturer: Carboloy Co., Inc., Detroit, Mich. and Ingersoll-Rand Co., Phillipsburg, N. J.

Claims: Developed cooperatively with Ingersoll-Rand Co., the development consists of a technique of permanently mounting ultra-hard Carboloy Cemented Carbide inserts in 4-point jack-bits. Accompanying this feature, Ingersoll-Rand has developed a special longer wearing alloy steel drill rod with a special high-toughness stud connector to mount the bits on the drill rod. The combination of these developments makes possible the securing of maximum benefits from the use of the carbide, resulting in longer life for both jack-bits and drill rod. The new bits have demonstrated the ability to drill blast holes in the hardest of rock formations and are said by their manufacturers as being able to make economical the operation of some mines too costly to work with present drilling equipment.

Hydraulic Units

Manufacturer: LaPlant-Choate Mfg. Co., Inc., Cedar Rapids, Ia.

Claims: Designed for hooking into existing hydraulic systems, these new units make it possible to operate a 2 or 4-yd. scraper in combination with present dozers without having to purchase an additional hydraulic system for scraper operation. The conversion units are available in two

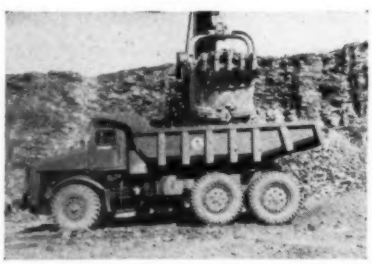
designs—one for adapting the 2-yd. LaPlant-Choate scraper to present D-2 hydraulic dozers and the other for adapting the 4-yd. scraper model to D-4 dozer units. The same assemblies can also be used effectively on other makes of hydraulic tractor-dozers equipped with front mounted pumps and four-position valves as long as the capacity of the pump and horsepower of the tractor are adequate for scraper performance.

The hook-up of either arrangement is a simple job and can be done without special tools. Also, if necessary the dozer or scraper can be jettisoned within a few minutes, permitting individual operation of either unit.

Experimental Truck

Manufacturer: The Euclid Road Machinery Co., Cleveland, Ohio.

Claims: Believed to be the largest truck ever built, this 40-ton capacity unit was recently completed in the experimental department of the Euclid Machinery Co. Powered by a 12-cylinder supercharged Cummins Diesel engine of 550 h.p., the truck has front tires of 18:00 x 24 size with the eight other tires on the two drive axle being 16:32. Gross weight of the truck with capacity payload is approximately 80 tons.



Still in the experimental stage, this huge truck has been shipped to a mining property of M. A. Hanna Co. on the Mesabi Iron Range in Minnesota where its performance is being tested and observed by engineers. Future production plans will be developed after extensive field tests.

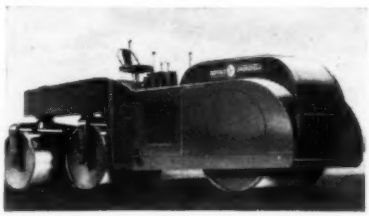
New Rock Drill

Manufacturer: Ingersoll-Rand Co., Phillipsburg, N. J.

Claims: The J-30 Jackhamer is a new rock drill in the 30-lb. class designed for drilling medium to hard rock. For coal mining, the machine is equipped with an extension grip handle and rider pads that facilitate drilling from a plank. The Jackhamer possesses a new three in one backhead which allows the machines to be converted to any one of three types of machines, wet, dry, or blower type. In addition, the J-30 has a sealed throttle valve, strong rifle bar, a two-piece chuck and a long wearing piston.

3-Axle Tandem

Manufacturer: The Buffalo-Springfield Roller Co., Springfield, Ohio.



Claims: Known as KX-25 this new 3-axle tandem will have the approximate metal weight of 12 tons and a ballasted weight of 18 tons. A short wheelbase is designed to give added maneuverability while the rolls will be widened to give increased rolling width. The latest improvements in the KT model tandems will be incorporated in this new unit.

T6 Traxcavator

Manufacturer: Trackson Co., Milwaukee 1, Wis.

Claims: The T6 Traxcavator is mounted, and engineered as a unit, on the "Caterpillar" D6 tractor to make fullest use of the power and work capacity of the tractor. Buckets of 1½ or 1-3/4 cu. yd. rated capacity are standard though quarry, heavy duty, and other buckets can be supplied. A bull dozer blade, quickly interchangeable with the bucket, is also available.

All-Purpose Cable

Manufacturer: Wire & Cable Division, Wind Turbine Company, West Chester, Pa.

Claims: Only 1/5 the weight of chain of equal strength, the Bulldozer Tenton All-Purpose Cable is suited for the needs of garagemen, farmers, loggers, contractors, mechanics, truck and bus operators, or wherever heavy duty towing or pulling needs to be done. Made of flexible wire rope, the cable has a minimum breaking strength of 20,000 lbs.

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. If no change in copy is desired, three continuous insertions are offered for the price of two. Read these instructions carefully. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Count your own copy to save delay. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January issue closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

Bucyrus-Erie gas-air shovel, GA-2, No. 4151, with 1 cubic yard manganese front rock dipper, 22'-6" boom with new wood, 16' handle, 4 cylinder 4" x 9", 275 cfm water cooled air compressor, powered with Waukesha WK-4 cylinder 6¾" x 8" gasoline engine, with recent repairs of over $1000, and with approximately $400 worth of spare parts. This machine is in good mechanical condition, and is being used daily loading coal. Available after March 20.

GARLAND COAL & MINING COMPANY
321 South Third Street
Muskogee, Oklahoma

Lorain L40 machine No. 9553, condition good, Waukesha 4⅛ x 4¾", 35' boom, Hendrix drag bucket, 32" tracks, shovel front used 6 weeks, rope crowd. Location Florida. Price $8,000. Box 3211

3 cu. yd. used heavy duty dragline bucket. Bucyrus-Erie Type "AY." In good condition. Located southern Texas. Price reasonable. McAlester Fuel Company, McAlester, Oklahoma.

Excellent lime stone quarry site, two miles from city. Complete diesel power plant. Will sell or lease. Wm. Heumader, 1702 Dewey Avenue, St. Joseph, Mo.

New

BUCYRUS - ERIE

PARTS!

From U. S. Govenment Surplus

Parts For: 33B, 37B, 54B, and 120B. Gears, Pinions, Bearings, Bushings, Lining, etc.

Immediate Delivery From Available Stock. . . . At a Savings While They Last!

FURNIVAL
Machinery Company
5405 Lancaster Ave., Phila. 31, Pa.
TRinity 7-5200

Walker draglines—2 yd., 3 yd., 5 yd. Crawler cranes-drags—½ yd. to 4 yd. Crawler shovels ½ yd. to 4 yd. Truckcranes—25-30' bms., pneu. tires. Sauerman scraper hoists, 1 yd. to 6 yd. Tractor-dozers-scrapers-high lifts. Athey Loader for D8-RD8; dozer for D4. Rod mill, 5'x10'; 30" gy. crusher. 20 HP gas motor; 60 KW diesel generator. Good used equipment offers wanted. James Wood, 53 West Jackson, Chicago 4, Illinois.

Three Hug trucks with 12-cu. yd. hydraulic dump bodies, diesel powered. Two equipped with rebuilt engines, engine in third in good condition. 1200 x 20 tires 80% new.
One Mack truck with 11-cu. yd. hydraulic pump body, gas powered. 1300 x 24 front tires, 1400 x 24 rear, 80% new. Price $18,000, f.o.b. our plant No 1. Trucks can be inspected at any time.

Eau Claire Sand & Gravel Company
Eau Claire, Wisconsin.

TRACTOR CABS

Manufactured by

BUCYRUS-ERIE

For T14 — TD14 — TD18
INTERNATIONAL TRACTORS

IN STOCK—IMMEDIATE DELIVERY

— REDUCED PRICE —

Bucyrus-Erie Cabs are of an all welded construction.
They are designed to fit on the tractors together with Bucyrus-Erie Bullgraders or Bulldozers.
Weight of cab is approximately 600 lbs. complete with glass windows.

Agricultural Industries
Reg'd.
950 Duluth Avenue, East, Montreal, Canada

Modern floating washing plant, capacity 200 yards per hour. Located Northern California on paved road near railroad. Available now. For particulars address owner, William von der Hellen, Box 1026, Medford, Oregon.

For Sale or Rent

3 Terra Cobras purchased late 1946. Practically new. Also for sale, 5 Model LP LeTourneau scrapers with power control units. Excellent condition. Arcole Midwest Corporation, 221 N. LaSalle St., Chicago 1, Illinois.

LeTourneau Model F, 12.5 struck, 16 yd. heaped scraper, six 13:50 x 20 tires.
LeTourneau Model J, 12 cu. yd. scraper, six tires. Two 12:50 x 20 and four 12:00 x 20. Good condition.
Heil, C-16, 16 cu. yd. cable operated scraper. Four 18:00 x 24 tires. Good condition.
Heil, C-10 cu. yd. cable operated scraper. Four 14:00 x 20 tires, with Caterpillar P. C. U. Good condition. Immediate shipment.

HUNTER TRACTOR & MACHINERY CO.
327 S. 16th Street, Milwaukee 3, Wis.

New

DERRICKS

(ALL-STEEL, STIFF-LEG)

3 Available!

From U. S. Government Surplus. 30 Ton at 38 ft. radius; 60 ft. Boom with Bull Wheel.

Priced At a Saving!

FURNIVAL
MACHINERY COMPANY
5405 Lancaster Ave., Phila. 31, Pa.
TRinity 7-5200

International TD 40 TracTractor 8' Blade Caterpillar RD 7. Hydraulic hoists. Diesel power. A-1 condition. Can be seen at West Park Avenue and U. S. 41, Highland Park, Illinois. Telephone H. P. 850. Menoni & Mocogni.

SURPLUS DIPPERS FOR BUCYRUS-ERIE SHOVELS

2—½ cu. yd. Drag Shovel Dipper—17-B.
3—½ cu. yd. Skimmer Scoop Dipper—17-B.
1—¾ cu. yd. Welded Dipper—21-B.
1—1¼ cu. yd. Drag Shovel Dipper—38-B.
1—1½ cu. yd. Heavy Duty All Cast Dipper 42-B.
1—2 cu. yd. Rock Dipper—75-B.
F.O.B. Works

Write for any further information desired
BUCYRUS-ERIE COMPANY
Parts Department
South Milwaukee Wisconsin

---

3 Slightly used cylinder heads complete with valves and springs for Buda-Lanova diesel engine 6-LD-1611. Box 3215

---

800 gal. new Roscoe asphalt tank with flues, blowers & burners for truck mounting. $325.
New 1500 gal. Columbian tank on semi-trailer, complete with pump, hose & tools. $1100.
Cable burying plow, pneumatic tired, $345.
New Wiard No. 65 steel road plow, $25.
Used wheeled rooters, $200.
A&W model 77 patrol, dual tandem 10', $1750.
A. C. model 54 patrol, tandem 12', $1750.
Model L tractor & 10 yd. scraper, $3500.
Air Compressor, 315 LeRoi, gas, $1550.
Air Compressor, 210 Davey, gas, $1250.
New rock bits & drill, steel, ½ price.
5 ton roller, Galion, model R-3 wheel, $1950.
New Freuhauf 8 ton full trailer complete, $1550.
New slip scrapers, ¼ yd., $12.
New 2 ton hand winches, $45.
2½" Earth Auger-3 section handle, $1.50.
New ¾" cable 6 x 19 improved plow, steel, 20c.
New parts P & H cranes, Huber, Austin & Galion Rollers, Cat patrols, I. R. Compressor 315 with U. D. 18 diesel engine and CMC mixers. Buckeye 70 crane. Big saving. G. W. Kaufman, Markley Road—Cincinnati 30, Ohio.

(For Sale continued on page 304)

For Sale

(Continued from page 303)

"UNIVERSAL" ROD-CLAMPS (CAT-HEADS) Also called pig-knuckles. ⅝" — ½" & ¾" sizes. Large stock on hand. Write for quantity lot prices.

HAYS & NICOULIN
939 Franklin St., Louisville, Ky.

2½ yd. 80-D Northwest shovel.
New buckets: 2-yd. Johnson clamshell, 1-yd. and ¾-yd. Pettibone-Mulliken clamshells.
New sides and manganese fronts for: Northwest 80D and model 6 buckets also for 2½ and 1-yd. Marion, Link Belt, 1½ or 2½-yd. Lorain buckets.
Crowd chains for ¾-yd. Koehring No. 1641AA, 144 links—will also fit other shovels—unused.
Seaman Pullamixer, 72", 2 rubber wheels, unused.
Hughes-Keenan crane for D7 with hoister winch, new.
Roto tillers, new 20" and 26".
Wheels and tires for 50-ton Rogers trailer: 8 28 x 12 rear — 2 40 x 14 front, (used).
350-gallon water wagon w/2 rubber tired wheels.
Skagit winch, 80-ton pull, 2 drums, 2 nigger-heads, Chrysler motor, on skids, w/spare parts, unused.
Kerrick Kleaner, slightly used.
Two 1½-yd. Northwest shovel fronts.
Coal loader, air cooled gas motor, on 2 rubber tired wheels, used.
Turnapull, unused, Super C.
One 10-yd. Woolridge scraper, slightly used.
One Heil winch for D4 Caterpillar tractor, unused.
Hoister winch for Cat D7 tractor.

R. E. CUNNIFF
393 Brookline Street, Newton Center 59, Mass.

2—Bucyrus-Erie dragline buckets — 1 cu. yd. model AX (condition guaranteed)—$325 each.
1—Bucyrus-Erie backhoe (drag shovel) front for 29B or 33B machine (perfect condition). $1045.
Box 3213

1—27E Koehring paver
1—Type C Lakewood finishing machine
1—No. 8½ Freeman turntable
1—Koehring subgrade planer
1—No. 9 C. H. & E. Triplex water pump
Box 3212

---

3 yard shovel dipper in good condition, suitable for Bucyrus, Marion or other twin stick machine. Price $1000.
Phone 87 Box 196 Greenville, Ky.

8"x8" Steam shovel thrusting engine, new. 66 h.p. at approx. running speed of 320 rpm. Full details furnished upon inquiry to Clyde Equipment Co., 3410 First Ave. South, Seattle 4, Wash., or Bucyrus-Erie Co., Parts Division, South Milwaukee, Wis.

Shovel front and Hercules motor suitable for Bucyrus-Erie 19-B or 20-B. Shovel front complete with ropes and drum lagging. Hercules WXC gasoline motor, complete with radiator, electric starter, electric fuel pump, master clutch, drive sprocket, mounting brackets, and extra magneto. Motor ready to install and operate without delay. Box 3203

1—Rex 34-E dual drum paver, Serial No. GG 153.
1—Blaw Knox concrete finishing machine, Serial No. XB 2087.
1—Jaeger concrete finishing machine, Serial No. 42-X-087.
1—Buckeye power driven fine grader, Serial No. 319.
1—Lorain 40-D crane and dragline, Serial No. 10798.
1—International TD-14 tractor & bulldozer, Serial No. TDF 675.
1—Trail grader—Cleveland, Serial No. 4176.
All of the above in excellent condition.
Ivy H. Smith Co., Jacksonville, Fla.
P. O. Box 5098 Ph. 9-4458

Speeder ½ yd. crane, $3000. Barber-Greene 62A and vibrator, $3800. Slackline ½ yd. complete, $2500. Austin Western bin 21 yd., $800. R. D. 4 cat and end loader $4000. Weldon Lawrence, 320 W. 3rd St., Prophetstown, Ill.

Used dragline attachment for 54-B Bucyrus-Erie. 70' boom, fairlead, including one 2½ cu. yd. medium weight type "AX" Bucyrus-Erie bucket and one 2½ cu. yd. Page type "RC" bucket. Both buckets in good operating condition, available for inspection Sioux Falls, South Dakota. Box 3210.

---

1 Bucyrus-Erie 37-B shovel front complete with boom, dipper sticks and bucket with all parts as taken from 37-B machine. Excellent condition. Located in Minn. Price $1250. Apply Delta Farms, Lockport, La.

FOR SALE

1 steel hopper base for bin bottom, size 5'x9' complete with Johnson Gate, used on one job only. Can furnish shop drawings for same if interested.

McKEY FANSHER CO., Oskaloosa, Ia.

P-H crane, model 600, 50' boom, 1¼ yd. bucket, working. Mack EF 5 yd. dump, 9:00x20 tires. P. Anzelmo, 85 River St., Carlton Hill, N. J.

Surplus Swivel Hook Double Sheave Blocks

2 10 ton "American" 14" swivel hook double sheave block, diamond pattern with cast steel sheave bushed with self lubricating bronze bushings, grooved for ⅝" rope. Groove diameter 12¼" equipped with 100 lb. cheek weights. 2½" swivel hook. Approximate shipping weight 234 lbs. American Hoist & Derrick Co. Dwg. 1-M-6560.

1 10 ton "American" 14" swivel hook double sheave block, diamond pattern with cast steel sheaves bushed with self-lubricating bronze bushings. Grooved for ¾" rope. Groove diameter 10½" equipped with 100 lb. cheek weights. 2½" swivel hook. Approximate shipping weight 235 lbs. American Hoist & Derrick Co. Dwg. 1-M-6560.

1 40 ton "American" 24" swivel hook double sheave block diamond pattern with cast steel sheaves grooved for ⅞" rope. Sheaves to be bushed with plain bronze bushings, with center bored sheave pin and ¼" Alemite hydr. grease fitting No. 1980 equipped with 300 lb. cheek weights and 5½" swivel hook. Total weight of block 1190 lbs. Dwg. BEFP 1-M-6560.

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Two rebuilt Bucyrus-Erie hydraulically operated wheel type scrapers, model H-44, 4 cu. yd. struck measure capacity, mounted on two 11.00X20 pneumatic tires. Price on request.
Box 3208

---

1 reconditioned TD-18 International tractor with new cable controlled Bucyrus-Erie Angle Dozer.
1 new generator set powered by Buda 6 cyl. gasoline engine, AC, 25KW, 3 phase, 60 cycles, 220 volts.
30 new Y-91 Continental Red Seal engines.
1 near new portable Greco lubrication unit, gasoline engine driven, complete with electric light plant, mounted on 1 ton, 2 wheel trailer.
1 reconditioned Kohler 1½KW generator set.
1 near new Williams dragline bucket, 1½ cu. yd.
1 near new Williams clamshell bucket, 1 cu. yd.
3 new Westinghouse Flex Arc welders, 400 amps.
6 reconditioned 2" Jaeger centrifugal pumps.
2 reconditioned Whiteman concrete finishing machines.
$25,000 worth genuine new Caterpillar parts priced for quick sale.

SERVICE EQUIPMENT COMPANY
P. O. Box 3035 Shreveport, La

½-yd. shovel front for Ryers Model 60. Good Condition. Blazer-Jenkins Concrete Co., Gallipolis, Ohio. Phone 480.

MECHANICS • HOME STUDY

Step up your own skill with facts & figures of your trade. Audels Mechanics Guides contain Practical Inside Trade Information in handy form. Fully Illustrated. Easy to Understand. Highly Endorsed. Check book you want for 7 days' Free Examination. Send no Money. Nothing to pay postman. ☐Carpentry $6 • ☐Auto $4 • ☐ Oil Burners $1 ☐Sheet Metal $1 • ☐Welding $1 • ☐ Refrigeration $4 ☐Plumbing $6 • ☐Masonry $6 • ☐Painting $2 • ☐Radio $4 ☐Electricity $4 • ☐Mathematics $2 • ☐Steam Engineers $4 ☐Machinist $4 • ☐Blueprint $2 • ☐Diesel $2 • ☐Drawing $2. If satisfied you pay only $1 a month until price is paid.
AUDEL, Publishers, 49 W. 23 St., New York 10, N. Y.

HELP WANTED

Dragline operator wanted by mining company in Columbia, South America. In replying state age, experience, references, etc. Box 9262

EQUIPMENT WANTED

Wanted: 40' dragline boom for Lorain 40, serial No. 2090. Box 3216.

Wanted: Koehring crane model 301 with Wisconsin engine "R.B." Write to Willy Boutin, 3281 Mont-Joly St. Montreal P. Q. Canada.

New or used 4-foot Standard Symons cone crusher with coarse bowl or similar Telesmith gyrosphere. Oscar J. Mortensen, Conrad, Montana.

---

5 to 10 cubic yard electric powered dragline, walker preferred, 150 to 180 foot boom, must be in good condition, needed in next few months. D. W. & R. A. Mills Limited, Box 418, Minto, N. B. Canada.

Used dragline boom suitable for Lorain 40 No. 2090. Must have fairlead and drum lagging.
Box 3206

Will buy shovels, draglines up to 1¼ yd. Also tractors and construction equipment of all types. R. Marchek, 2416 53rd St., Kenosha, Wis. Phone 2-2462.

New trade literature

Title: **"Profit Insurance"**
Subject: Devoted mainly to captioned action photographs, this 12-page booklet shows Tournapulls at work in the general construction, industrial, railroad, mining, pit and quarry, and export fields. Actual job histories are given for the equipment pictured in various phases of excavating work.
Where to Get: Advertising Dept., R. G. LeTourneau, Inc., Peoria, Ill., or LeTourneau distributors. Ask for Form No. TP-130 (Free).

Field Notes

(Continued from page 300)

that will slip freely over the wrapped portion of the split pipe. After swedging the ends of the larger pipe down so they will just slide over the smaller pipe, split the larger section into halves. Place halves of the larger pipe over the inner tubing and wire the halves together. Next, slide the larger pipe to the left or right, and weld the two halves together half way. To prevent burning the tubing, one should keep pouring water over the tubing during welding operations. Cool the part of the pipe that has been welded and slide the halves in the opposite direction as far as possible and finish welding them together. Now center the large pipe over the mended portion (after cooling the pipe) and weld the ends of the larger pipe to the smaller one for your permanent joint.

W. P. Hauser